

АНГЛИЙСКИЙ язык вкартинках

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ENGLISH

THROUGH PICTURES

BOOKS 1,2

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and

CHRISTINE M. GIBSON



PREFACE

ENGLISH THROUGH PICTURES

This book will teach you the first steps of English. It gives you about 500 important words in sentences, with the meaning shown through pictures.

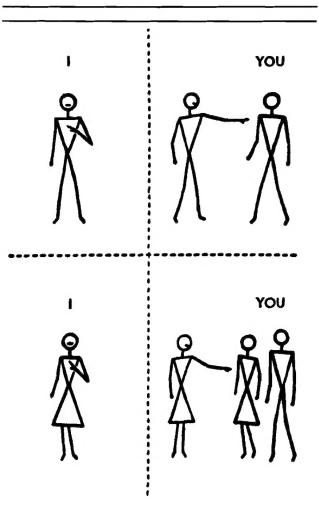
Read each page like this:

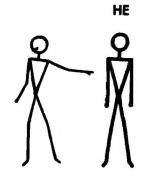
1	2
3	4

The sentences will take on meaning for you as you compare them with the help of the accompanying pictures, page by page. The load on your memory is kept light. All your attention can be given to seeing how changes in the sentences go along with changes in the meaning. Learning English this way is more like play than hard work.

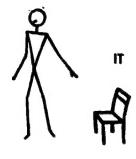
If you have to work alone, it is best to work through writing and wait for the pronunciation until you have help. Study two or three pages together until you can give the sentences that go with the pictures. When you are forming the sentences do not rely on your memory alone: try to understand in English what the pictures say. If you do this you will be thinking in English from the very start and that is the way to a mastery of the language.

When you have worked through thirty pages of the book in this manner, test your knowledge by answering in English the questions on pages 31, 32 and 33. Compare your answers with those given on page 34. Further questions with answers are provided at intervals throughout the book.

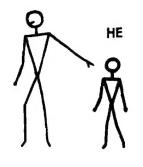


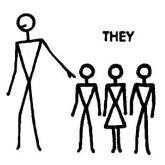


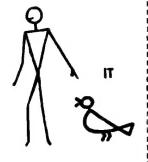


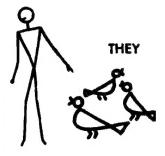








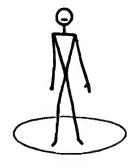




I am here.



He is there.





She is here.









It is there.



They are here.

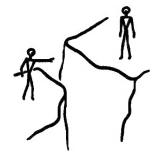


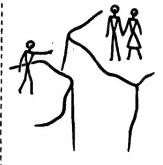
They are there.



You are there.























This is a man.



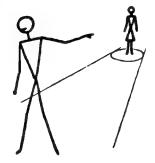
This is a woman.



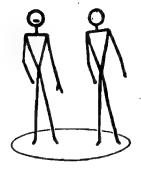
That is a man.



That is a woman.



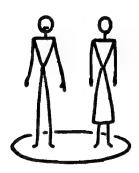
This man is here.



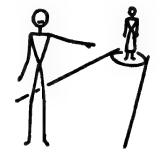
That man is there.



This woman is here.



That woman is there.



This is a table.
This table is here.



That is a table.
That table is there.

It is there.



This is a hat.



This is a hand.



These are the fingers.

This is my head.



This is my hat.



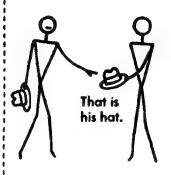
My hat is in my hand. It is in my hand.



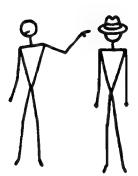
My hat is on my head. It is on my head.







His hat is on his head.



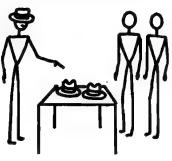
Her hat is in her hand.



That is your hat. It is on the table.

Those are your hats. They are on the table.





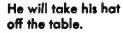
These are my hands.

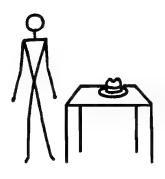
Those are your hands.





His hat is on the table.







He is taking it off the table.

He took it off the table.





He will put his hat on his head.



He is putting his hat on his head.

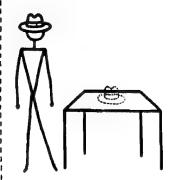


He put his hat on his head.





It was on the table. It is on his head.



He will take his hat off his head.



He is taking his hat off his head.



His hat is in his hand. It was on his head.



He took his hat off.

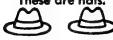


It is, in his hand.

This is a hat.



These are hats.



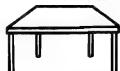
This is a hand.



These are hands.



This is a table.



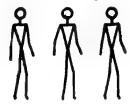
These are tables.



This is a man.



These are men.



This is a woman.



These are women,



This is a man.



This is his hand

It is the man's hand.

This is a woman.



This is her hand.

It is the woman's hand.



This is a man's hat.
It is on a man's head.

Now it is in the man's hands.
It is in his hands.



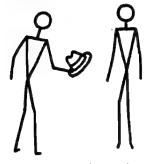


This is a woman's hat. It is on a woman's head.

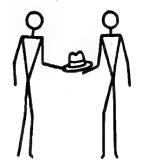
Now it is in the woman's hands.
It is in her hands.



He will give his hat to the man,



He is giving his hat to the man.



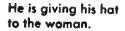
He gave it to the man. He gave it to him.



It is in the man's hands now.



The man will give his hat to the woman.



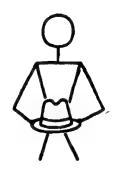




He gave it to the woman. He gave it to her.



It is in the woman's hands now.



The woman will put the hat on the table.





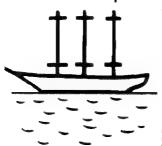




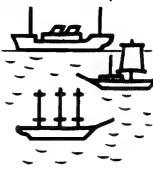
It was in her hand.
It is on the table.



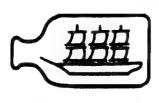




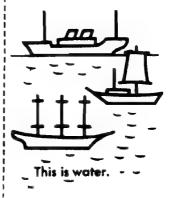
These are ships.



This ship is in the bottle.



These ships are on the water.





This is a glass. It is on the table.



Now the glass is off the table.



The glass and the water are on the floor.





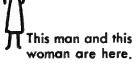


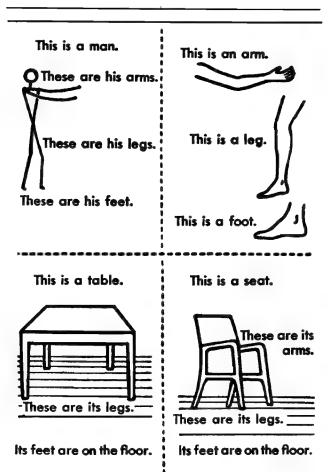


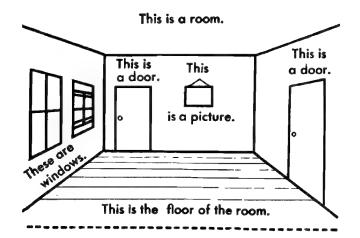
That man and that woman are there.

O
O

That is a bird and that is a bird. Those are birds. They are birds.

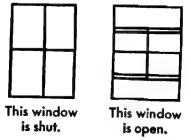


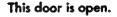


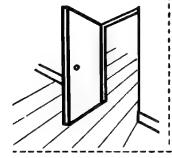


These are the windows of the room.

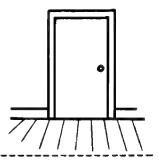
This is a window and this is a window.



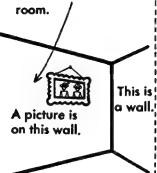




This door is shut.



This is a wall of the



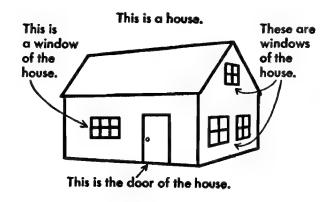
This is the floor of the room.

This is a picture of a man and a woman.

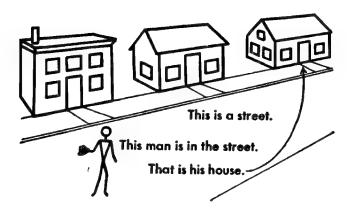
This is the cord of the picture.



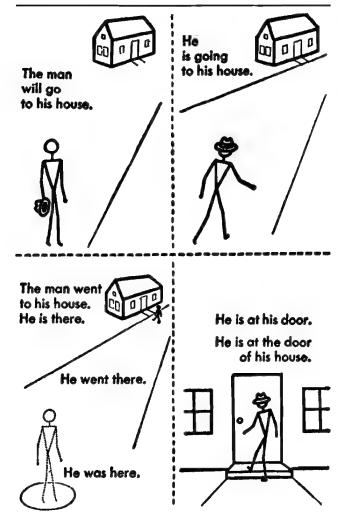
This is the frame of the picture.



These are houses.



<u>۴</u>





What is this?
It is a hat.
"What is this?" is a question.
"It is a hat," is an answer.

This is a question mark.



We put question marks after questions.



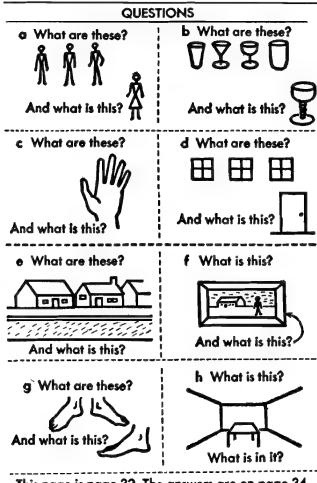
"Is this a hat?"
That is a question.
"Yes, it is."
That is an answer.



"Is this a hat?"
"No, it is not a hat. It is a hand."
That is an answer.

QUESTIONS a What is this? It is a b What is this? What is this? d What is this? e What is this? f What is this? g What is this? h What is this?

This page is page 31. The answers are on page 34.



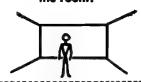
This page is page 32. The answers are on page 34.

QUESTIONS

a is the hat on the table?



b is the man in the room?



c is the picture on the wall?



d is the bird on the seat?



e Is the glass in the woman's hand?





f Is the water in the glass?



g Is this ship in a bottle?



h Are the man and the woman at the door?



This page is page 33. The answers are on page 34.

These are answers to questions on pages 31, 32, and 33. This page is page 34.

Page 31

- a It is a house.
- c It is a table.
- e It is a leg.
- g it is a leg of a table.

Page 32

- a They are three men. That is a woman.
- c. They are fingers.
 That is the thumb.
- They are houses.
 That is a street,
- g They are feet. That is a foot.

Page 33

- a Yes, it is.
- c No, it is not. It is on the floor.
- e No. It is in the man's hand.
- g No. It is on the water.

- b It is a ship.
- d It is a bottle.
- f It is an arm.
- h It is an arm of a seat.
- b They are glasses. That is a glass.
- d They are windows. That is a door.
- f It is a picture of a man and a house. That is the frame of the picture. (Its frame)
- h That is a room
 A table is in it.
- b Yes, he is.
- d No, it is not.
 It is on the floor.
- f No, it is not in the glass.
- h Yes, they are at the door.



What is this?
This is a clock.
What is the time?
The time is one (1:00).
One hand is at one.



What is the time? The time is two (2:00). It was one (1:00). It will be three (3:00).



What is the time? The time is four (4:00). It was three (3:00). It will be five (5:00).



What is the time? Now the time is six (6:00). It was five (5:00). It will be seven (7:00).



What is the time? Now the time is eight (8:00). It was seven (7:00). It will be nine (9:00).



What is the time? Now the time is ten (10:00). It was nine (9:00). It will be eleven (11:00).



What is the time? The time is twelve (12:00). It was eleven (11:00). It will be one (1:00). The two hands are at twelve now,



These are the numbers from one to twelve.

One, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve.

What are things?



A house is a thing. Houses are things.

A hat is a thing. Hats are things.

Doors and windows are things. Tables and seats are things.

There are two persons in this room.
They are a boy and a girl.

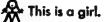


The girl is at the door. The boy is at the window.

This is a man.



This is a boy.



Men and women and boys and girls are not things. They are persons.

You are a person.

The girl will go to the window.



She will be with the boy at the window.

She will be with him at the window.

The girl is going to the window.

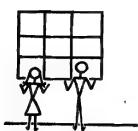
Where was she?

She went to the window. Where is she now? She is at the window now.



She is with the boy.

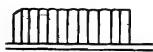
She was at the door.



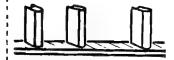
They are at the window together.

She is with him at the window.

He is with her at the window.



These books are together on the shelf.



These books are not together. They are on the shelf, but they are not together. The girl and the boy will go from the window.



They are going from the window.

They were at the window.



They went from the window.

She went with him and he went with her.



Now they are at the door together.
The boy is with the girl at the door.

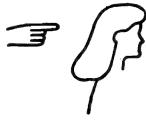
She is at the door again.



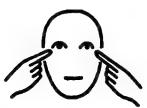
This is my head.



That is her head.



These are my eyes.



This is one eye.

This is the other eye.

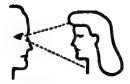
Her eyes are open.



Her eyes are shut.



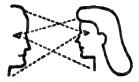
My eyes are open. see. Her eyes are shut. She does not see.



I see her. She does not see me.

Now her eyes are open. She sees. What does she see?

She sees me.



I see her. Our eyes are open.

Her eyes are open.





She sees. They were shut. She did not see.

She did not see me.

Her eyes are shui.

They were open. She saw. What did she see?



She saw me.

A man has two eyes. I have two eyes.

These are my eyes.

A man has a nose. I have a nose.



A man has a mouth.



This man's mouth is open.

He is saying "mouth."

nis is my nose.



His mouth is shut.



"mouth."

His mouth is shut. He will say "mouth:



He is saying "mouths.

He said "mouths." He is not saying "mouths" now. His mouth is shut again. These are three books.



They are on a shelf.



This book is between the other two books.





I have the book in my hand now.

It was on the shelf. It was between the other two books on the shelf.

These are the pages of the book.



These are the covers of the book.

The pages are between the covers of the book.

These are the fingers of my hand.





My nose is between my eyes.



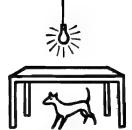
And it is between my eyes and my mouth.

My mouth is under my nose.



My nose is over my mouth.
Our noses are over our mouths.

The light is over the table.

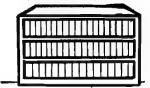


The dog is under the table.

This is a clock.



It is on the wall.
It is over the
bookshelves.



The bookshelves are under the clock.

This is his hair. It is short.





These are his ears.



Where are her ears? They are under her hair.



Her hair is over her ears.

This is his head.





This is his face. His eyes, his nose, and his mouth are parts of his face.

This is a clock.



It has a face. This is the face of the clock. The clock has two hands, a long hand and a short hand. The long hand is at 5. The short hand is between 7 and 8. A clock has a face.



It has no nose.



It has no eyes.



It has no mouth.





It has no hair but it has a face.



It has a face and two hands, the long hand

and the short hand.



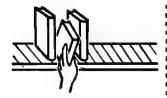
The long hand of the clock is between one and two.

One is before two. Two is between one and three. Three is after two and two is after one.



I have this book in my hands.

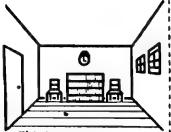
It was on the shelf with the other books.* It was between the other two books before I took it from the shelf.



I have it in my hand.
I am putting it between the other two books.
Then it will be with the other books.



Now it is on the shelf again. It was in my hand. I had it in my hand. It is not in my hand. Where is it?



This is a room,
What do you see in the room?
Do you see the floor and three walls of the room?

Do you see them?

Do you see a door and two windows? Is one of the windows open? Is the other window shut? Do you see two seats and the bookshelves

and the bookshelves between them? Do you see the clock over the bookshelves? Yes. I see them.

These things are in the room. The room is in a house.



This is a face.

Eyes, nose, and mouth are parts of a face.

Which are the eyes? Which is the nose? Which is the mouth?



These are my hands.
Which is my right hand?
Which is my left hand?
Which are my thumbs?
Which are my fingers?

This is a man.
Which are his arms?
Which are his hands?
Which are his legs?
Which are his feet?

This is his head.

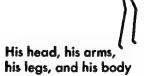
These are his arms. These are

his legs.

These are his feet.

What is this?





are parts of a man.

He has a body.



All men and women and boys and girls have bodies.

This baby has a body.

This dog has a body.



This is his body.

He has four legs and a head and a tail. He has no arms or hands, but he has feet. His head, his body, his legs, and his tail are parts of a dog.

This is a dog's head.



Which is his mouth? Which are his eyes? Which are his ears? Which is his nose? This is a foot.

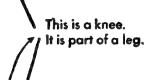


These are toes.

They are parts of a foot. These parts of a foot are its toes.

This is a toe.

This is a leg



This part of a leg is its knee.

Our legs are parts of us.

This is a neck.

It is a part of a man. It is between his head and his body.

The part which is between his head and his body is his neck.

This is a man's head.



This is his chin.
It is under his mouth.
It is a part of his face.
The part which is under his mouth is his chin.

This is a man's body.



The part which is between his head, his arms, and his legs is his body.

This is his body.



This is a chest of drawers.



This man has his finger on his chin.



This man has his hand on his chest.

This baby is on his hands and knees. C

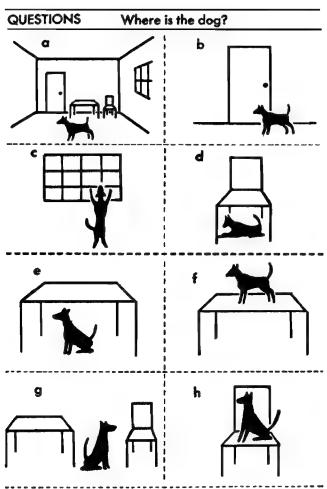


This baby is on his hands and feet.

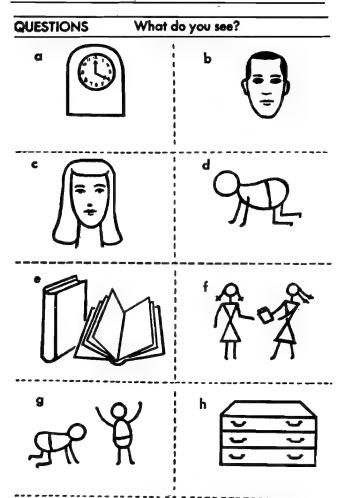
This baby is on his knees.



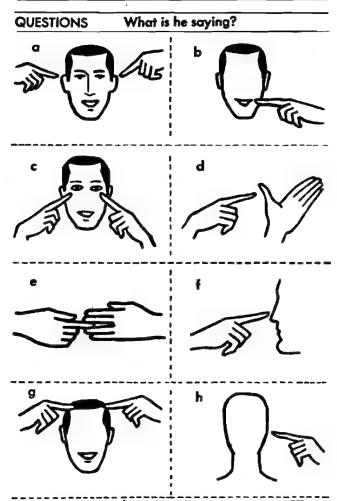
This baby is on his feet.



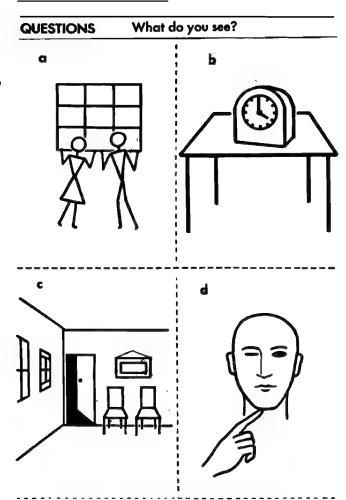
Answers to these questions are on page 56.



Answers to these questions are on page 56.



Answers to these questions are on page 57.



Answers to these questions are on page 57.

Answers to questions on pages 52-53.

Page 52

- a The dog is in a room.
- c He is at the window.
- He is under the table.
- g He is between the table and the seat.
- b He is at the door.
- d He is under the seat.
- f He is on the table.
- h He is on the seat.

Page 53

- I see a clock.The time is four.
- c I see a woman's face.
- I see two books. One of them is open. The other is shut.
- g I see two babies. One of them is on his hands and knees. The other is on his feet.

- b I see a man's face.
- d I see a baby. He is on his hands and knees.
- f I see two girls. One of them is giving a book to the other.
- h I see a chest of drawers.

Answers to questions on pages 54-55.

Page 54

- a He is saying, "These are my ears."
- c He is saying, "These are my eyes."
- e He is saying, "This finger is between these fingers."
- g He is saying, "This is my hair."

- b He is saying, "This is my mouth."
- d He is saying, "This is my thumb."
- f He is saying, "This is my nose."
- h He is saying, "This is my head."

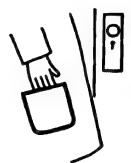
Page 55

- a I see a boy and a girl. They are at a window.
- c I see a room. It has two seats in it. It has two windows and a door. One of the windows is open. The other window is shut. The door of the room is open. A picture is on the wall.
- b I see a clock on a table. The time is four.
- d I see a man. He has his finger on his chin. One of his eyes is open. The other eye is shut. His mouth is shut. He has no hair on his head.

Who is this?
He is John Smith.
His name is John Smith.
Where is John Smith?
He is at the door of his house.



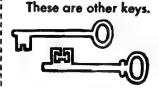
He has his hand in his pocket.



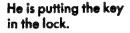
He is taking a key from his pocket.

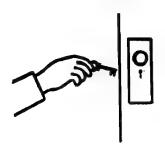


This is a key.



rie will put the key in the lock of the door.



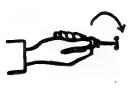




He is giving a turn to the key.

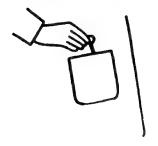


The door is open now.





John took the key from the lock.
He is putting it in his pocket.
He will go into his house.



He is going into the house.

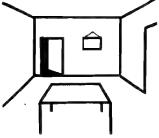


He went into the house. He is in the house. The door is shut.



This is a room in the house.

Is John in the room? No, he is not.



He will come into the room.

He is coming into the room,

He will go to the table.

Mr. Smith came into the room. He went to the table.





Is Mrs. Smith in the room?

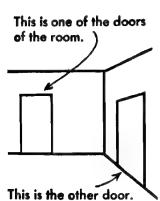


No, she is not.

She is in the house but she is not in the room. She is in another room in the house.



Who is this?
This is Mary Smith. She is Mrs. Smith.
Her name is Mary Smith.



This is one of the windows of the room.

This is another window.



And this is another window.

One window is open.
The other windows are shut.

This is one of my hands. It is my left hand.





This is my other hand. It is my right hand.



This is my left thumb.

These are the other fingers of my left hand.

Mrs. Smith is not in the room.

She went out of the room.

Mr. Smith is in the room. He came into the room.





Mr. Smith is putting his hat on the table.



He will go out of the room through this door.

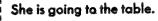
He put his hat on the table.

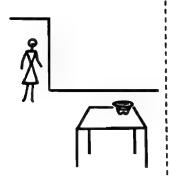
It is on the table now.



He went out of the room through this door.

Mary is coming into the room.

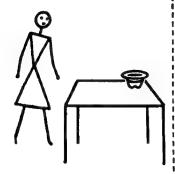






She will see the hat.

She sees it.





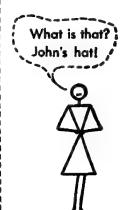
She saw it.
When did she see it?
She saw it after she went
to the table.











She will take the hat in her hand.







She took it in her hand. She is going out of the room.

She went out of the room with John's hat.

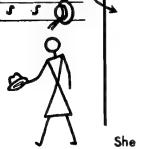




She has the hat in her hand.

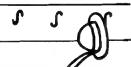
She is in another room now.

She came into this room through this door.



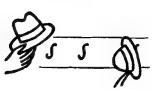
has the hat with her.

What are these? They are hooks.



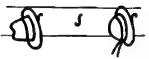
That is another hat. It is on a hook.

She will put John's hat on a hook.



She will put it on a hook with the other hat.

She put it on the hook.



Now it is with the other hat.

The other hat is one of Mary's hats.



He came into the room. He went to the table.



He is there now.

The hat is not on the table.



He is saying,



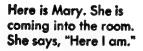
"Where is my hat? It is not on my head. It isn't here."







"Where is it? Mary, where is my hat? Where are you, Mary?"







"Where is your hat?"

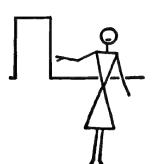
"You put it on the table. It was on the table."

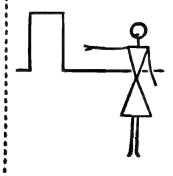




"I took it. I put it in the other room."

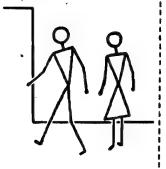
"It is on a hook there."
You will see it there."





John says, "I will get my hat."

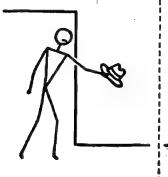


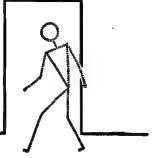




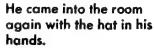
Did he get it? Yes. He has it.

He went out of the room.





When he saw the hat he took it off the hook.



He got it.



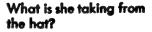
He is giving the hat to Mary.



"See what is in the hat, Mary!"



What is in the hat? Mary will see.







What is that in her hand?'
It is money.

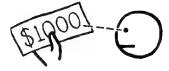


She sees.





What does she see?
One thousand dollars.



The money is in her hand.
It was in the hat.

Where was the hat? It was on the table.



What did she see? She saw the hat. She did not see the money.

She put the hat in the other room.

John went there and got it.

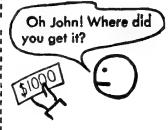


J



Who got it? John did.

Does she see the money now? Yes, she sees it.



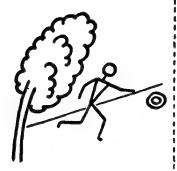
i was in the street.
I was coming here.



The wind came. It took my hat off.



I went after my hat.



When I took it up, there was this money.

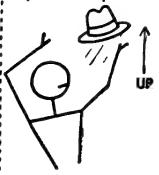


The money was under the hat.

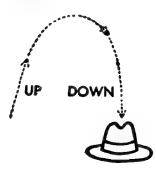


The hat was over the money.

The wind came. My hat went up.
When the wind came, my hat went up.



The hat came down again.



It was over the money. The money was under the hat.



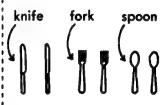
What is Mary doing?



She is taking things from a drawer.

What are those things in the drawer?

They are knives, forks and spoons.



The drawer has knives, forks and spoons in it.

Mary has a knife, a fork and a spoon in her right hand.



She took them from the drawer.

She will put them on the table.



These are drawers.

One of them is open.

The other two drawe

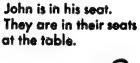
The other two drawers are shut,

Mary is getting the soup. These are plates of soupJohn is taking the seats to the table.





Mary is in her seat at the table.







Now they are taking their soup.



They have their spoons in their hands.

John is saying to Mary, "I took the hat up."





Mary is saying to John, "Where did the money come from?"

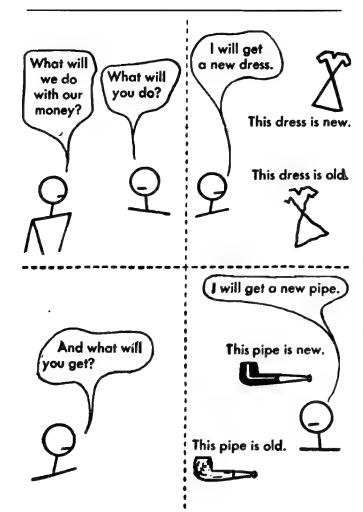
John said, "I saw it there under the hat."



Mary said, "But who put it there?"

John said, "Nobody put it there. The money was there and the wind came and put the hat down over the money."

Nobody—no man or woman or boy or girl or baby.



Mary is getting the new dress. She is in a store. The other woman has two dresses in her hands.



This is the store.



Dresses and hats and shoes are in the window of the store.



These are shoes.
They are women's shoes.



These are stockings.



These are gloves.

Dresses and stockings and shoes and gloves are clothing.

This is a tree.

This is a branch of the tree.

An apple. is on this branch.

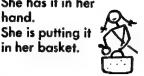
It is over the girl's head.

She will take the apple from the branch. She will put her hand up. She put her hand up. She took the apple. It is in her hand. She took the apple which is in her hand. She has it in her

hand.

in her basket.





She put it in her basket. She had it in her hand before she put it in her basket.

It was on the branch before she put her hand up and took it.



After she took the apple she put it in the basket. Then she put her basket down. The apple was up on the tree. Now it is down in the basket.





When was the apple on the branch? When was it over her head? It was on the branch before she took it. It was on the branch then.



When did she take it? She took it after she put her hand up. She took it then.

When did she put it in the basket?



She put it in the basket after she took it from the branch.

When did she have the apple in her hand?



She had it in her hand after she took it from the branch and before she put it in the basket. This is a box.



This is the front of the box.

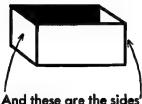
This is a house.



This is the front of the house.

This is the front door.

This is the back of the box.



And these are the sides' of the box.

This is a coat.

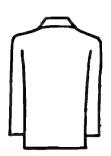


This is the front of the coat.

These are the arms of the coat.



These are the sides of the coat.



And this is the back of the coat.

These are a man's arms.



These are his sides.



And this is his back.

Who is this? This is Mrs. Smith. She is Mary Smith. "Mary Smith" is her name.



What is that? What is in her hands? It is a tray.
She has a tray in her hands.



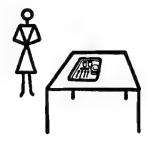
She will put the tray on the table.



She is putting the tray on the table.



She put the tray on the table.



It was in her hands. It is on the table now. Here is the tray.



What are these things on the tray?

These are glasses.



What are these?
They are forks.



What are these?
They are two other knives.



What are these? They are spoons.

What is this?
It is another spoon.

What is this?

These are three other plates.

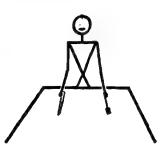


Mrs. Smith is taking a knife and fork off the tray.

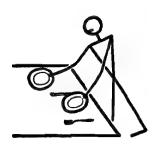
She has them in her hands.



She is putting them on the table.



Now she is putting the plates on the table.



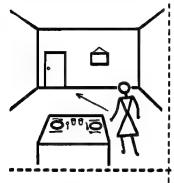
She put the knives and forks and spoons and plates and glasses on the table.

She put these things on the table.



Mary Smith will go from the table to the door.

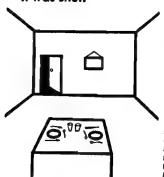
She is going to the door. The door is shut.





She went out of the room.

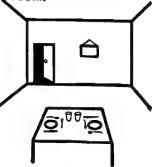
The door is open now. It was shut.



Mary Smith is not in the room.

She was in the room.

She went out of the room.





What is this?

What is this?

What is this?

What are these?





What is this?



What is this?



What is this?



What are these?







What is this?

What is this?



What are these things?



Mary is making soup.



This is a plate of soup.



She will make the soup from milk and potatoes.

These are potatoes,



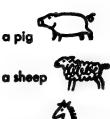
This is a bottle of milk. It is cow's milk.

This is a cow.



Cows are animals.

These are some other animals.



a horse



We get milk from cows. Mary is putting some milk in a cup.



The milk is going into the cup.

Mary has a potato in her hand.



She is taking its skin off with a knife.



This is a plant.

This is its flower.



These are its fruit.

This is a branch.

This is its stem. These are its

roots.

We get potatoes from the roots of a plant.



Here they are in the earth.

We get them up with a fork.



These are roots of other plants.



Mary is making the soup.



This is the pot.



This is the cover of the pot.

She will make the soup in this pot.

She put the potatoes in the pot.

The water in the pot is boiling.



This is a flame.

This is steam.



The pot is over the flame.
The flame is under the pot.



This water is boiling. It is giving off steam. The heat of the flame is making it give off steam. Ice is solid.

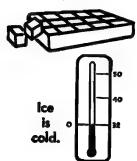
This is ice.





Water is a liquid. This is water.

This is a tray. It is a tray of ice.



The room is warm.
The heat of the flame is making the room warm.
The things in the room are warm;
ice is not warm. It is cold.

80

This is a bird. It is on a tree.





This is a plane. It is in the air.

It is going through the air.

These are planes.



We take in air through our mouths and through our noses.



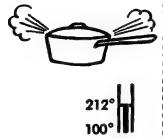
The air is coming out. It is warm.
When it comes out it is warm.

The air comes in. Then it goes out. That is a breath.

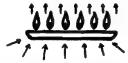
in out one breath in out two breaths in out



The room is warm.
The water in the pot is very warm.
It is boiling.



The air over the flame is very warm.
It goes up.



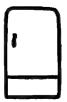
The air under the flame is not very warm. It goes up to the flame.

This is the fridge
It has ice in it.
The air in the fridge is cold.



This is milk.

These are eggs.



This is the fridge Mary keeps the milk in the fridge She keeps it in the cold

cir.
The air in the fridge is cold.

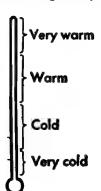
The cold air keeps the milk cold.

This is a clock.



A clock is an instrument for measuring time.

This is an instrument for measuring heat.



This is a measure. It is a yard measure.



There are three feet in a yard.

There are twelve inches in a foot.

This is Mary's foot.



These are her feet.



This is John's foot. It is ten inches long. The walls and floor of the fridge are thick.





Warm oir

the fridge are thick.



The thick walls keep the heat of the room out of the fridge.

They keep the heat from the milk.

The cold air in the fridge keeps the milk good.

This is a thin line.

This is a thick line.

John is having a drink. He is having a drink of milk from a glass.



The milk is good. John is happy. This milk is not good. It is bad.



John is not happy.

This is meat.



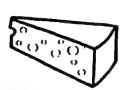
Mary keeps the meat in the fridge.

This is bread.



Mary does not keep the bread in the fridge. She keeps it in a bread-box.

This is cheese.



We make cheese from milk.
We get milk from cows.

This is butter.



We make butter from milk, Mary keeps the butter with the milk in the

She keeps the cheese there.

fridge.

These are apples.



These are oranges.







Apples and oranges are fruit.

Does Mary keep the fruit in the fridge?

What is the time?



The time is five (5:00). It is five.

Mary will make the soup.

What is the fime?



It is five-thirty (5:30).

Mary is making the soup.

The potatoes are in the pot. The water in the pot is boiling.

It is five-forty (5:40).



Mary has a fork in her hand.



She is putting the fork into the potatoes.

The potatoes are hard. The fork does not go into them.



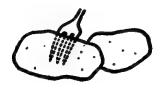
It is five-fifty (5:50).

Mary is putting the fork in again.

She is doing it again.



The potatoes are soft.
The fork goes into them.





She is taking them out of the pot and putting them on a plate.

The potatoes are on the plate.



They were in the pot. They were hard. They are soft now. Mary is crushing them with a fork.



They are not hard now. They are soft.



Meat is soft.



Butter is soft.



John has a bit of cheese in his fingers.



He is putting the bit of cheese in his mouth.

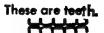


Now it is between his teeth.



This is his mouth.

This is a tooth.



The cheese is not soft.



It is hard.



John's teeth do not go into the cheese.

Mary put the potatoes and the milk and other things into the pot. This is salt. (See page 242)



She put the pot over a low flame. She put the cover on the pot.



The low flame is under the pot.

This flame is low.



This flame is high.



This building is high.



This building is low.



What is the time? It is six (6:00).

Now she is putting the soup in the plates.





Mary is tasting the soup. It has a good taste. The soup is ready.

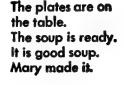
It was in the pot.



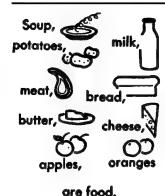


Now it is in the plates.

She made the soup. She put it in the plates. She took them to the table.







An apple An orange

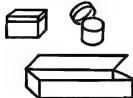
Apples and oranges are different sorts of fruit.

These are different sorts of glasses.

They are different sorts of food.



These are different sorts of boxes.



Glasses and boxes and fingers and dresses and flames are things. They are different sorts of things.



These are different sorts of plants.



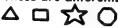
This is the leaf of one sort of plant.

This is the leaf of another sort of plant.

These are the same.

sorts of animals.

These are different.



These are the same.

These are different.

These plates are the same.



These plates are different.



These glasses are the same.

These are different.

Here are a woman and a boy.



The boy is the woman's son.
She is his mother.
He is her son.

Here are a woman and a girl.



The girl is the woman's daughter.
The woman is her mother.

Here are a man and his son.



The man is the father of the boy.

He is the boy's father.

Here are a man and his daughter.



He is the father of the girl. He is the girl's father. She is his daughter. The boy is the brother of the girl.



He is the girl's brother. He is her brother. The girl is the sister of the boy.
She is the boy's sister.
She is his sister.





This man and woman





have two sons



and three daughters.

This boy has one brother and three sisters.

This girl has two brothers and two sisters.

They are a family of seven (7).

Here are Mrs. Smith. her daughter Jane, and her son Tom.



They are at the table. They are having their potato soup.



Potato soup is a thick soup. It is not clear. Thick soup and clear soup are two different sorts of soup.

This water is clear. When a liquid is clear we **500**



Milk is not a clear liquid. We do not see through it.





The air is clear. I see the mountains. When the air is not clear I do not see them.



This soup is clear. We see the spoon through it.

Potato soup is a thick soup. We do not see the spoon through it. Who is this?



This is Mary Smith.
She made the soup.
This is Mary who made the soup.



This is the soup. Mary made it. This is the soup which Mary made. This is the milk. Mary put it in the soup.

This is the milk which Mary put in the soup.



This is a spoon. It is in my hand.
This is a spoon which is in my hand.



That is a glass of water. It is on the table.
That is a glass of water which is on the table.



This is a bone. It was in the dog's mouth. This is a bone which was in the dog's mouth.

This is a dog. He had the bone.



This is the dog who had it.



a What is the time?



b What are these?



c What is this?



d What are these?



e What are these?





h What is this?

Answers are on page 116.



a What is the time?



b What are these?



c What is this?



d What are these?



e What are these?





h What is this?



Answers are on page 116.

a What is this?



b What is this?

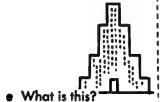


V V

d What is this?



c What are these?



What are these?



g What is this?



h What is this?

a This is a family.



What do you see?

c This is a fridge.



What do you see in it?

b This is a plant.



Which parts of the plant do you see?

d This is a dog.



Which parts of the dog do you see?

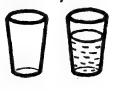
e What do you see?



9 What do you see?



f What do you see?



h What do you see?



Answers are on page 116.

Answers to questions on pages 113-115.

Page 113

- a The time is four-forty-two (4:42).
- c It is a pot.
- e They are roots.
- g It is butter.

b They are apples.

- d They are leaves.
- f It is a bottle of milk.
- h It is bread.

Page 114

- a It is cheese.
- c They are flames.
- e It is a high building.
- g It is a pig.

b It is a cup.

- d It is a horse.
- f They are a box and its cover.
 - h It is a sheep.

Page 115

- I see a father and mother and their son and daughter.
- I see a bottle of milk and four eggs and two roots.
- e I see a bone. It is on the floor. And I see the leg of a table.
- g I see a woman. She has a spoon in her hand. She is tasting the soup.

- b I see its roots and its stem and its leaves and its flower.
- d I see its head and ears and nose, its body, its legs, and its tail.
- f I see two glasses. One of them has liquid in it.
- h I see a man. He has a glass in his hand. He is having a drink from the glass.

a Where are the women?



What has one woman in her hands?

b What are these?



c
What is the girl
doing?

Where is the apple?

d Where will she put the apple? Where was it before she took it? (See pages 82-83)

- What are some different sorts of food?
- f What are some different sorts of animals?

- g What are some different sorts of fruits?
- h What are some different sorts of persons?

Answers are on page 120

a This is a glass of milk.
Is it clear? Do you see through it?



b Is the glass in this window clear? What do you see through the window?

c is glass hard?

d Is meat soft?

e Is ice warm?

f Are flames cold?



g What is he doing?



h What is she doing?

Answers are on page 121.

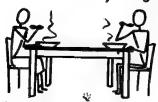
a What do you see?



b What is he doing?



c What are they doing?



d What are these?





e What do we keep in the fridge?



f What are some different sorts of things? Give the names of ten different things which you see in a house.

Answers to questions on page 117.

- a They are in a store. It is a clothing store. She has two dresses in her hands.
- b These are shoes (women's shoes) and stockings and gloves.
- c The girl is putting her hand up to the apple. It is on a branch of an apple tree.
- d She will put it in her basket. Before she took the apple it was on the tree.
- Bread, butter, milk, cheese, meat, eggs, and fruit are different sorts of food.
- f Cows, pigs, sheep, goats, and horses are different sorts of animals.
- g Apples and oranges are different sorts of fruit.
- h Men, women, boys, girls, and babies are different sorts of persons.

Answers to questions on pages 118-119.

Page 118

- No, it is not clear.No, I do not see through it.
- c Yes. Glass is hard.
- e No. Ice is cold.
- g He is taking potatoes out of the earth with a fork.

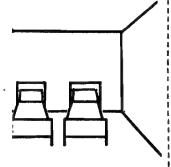
Page 119

- a I see a man. He is in a street. His hat is in the air. The wind is taking it up. The wind took it off his head.
- c They are in their seats at the table. They have their spoons in their hands. They are taking their soup.
- We keep the milk, butter, cheese, eggs, meat, and fruit in the fridge.

- b Yes. The glass in the window is clear. I see some mountains and a house.
- d Yes. Some meat is soft. But some meat is hard.
- f No. Flames are not cold.
- h She is putting some salt in the potato soup.
- b He is putting his hat on his head.
- d One of them is a clock. The other is an instrument for measuring heat.
- f Rooms and doors and windows and tables and seats and boxes and knives and spoons and forks and shelves . . . are different sorts of things.

This is a bedroom.
There are two beds in it.

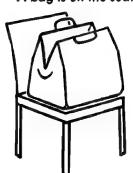
This seat is by the bed.





What is on the seat?

A bag is on the seat.



A woman is by the bed. Who is she? She is Mrs. Smith.





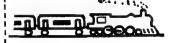
What is she doing? She is putting things into the bag.



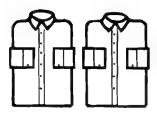
What is she putting into the bag? She is putting Mr. Smith's things into it.

Mr. Smith is going to California. Mr. and Mrs. Smith are in New York State.





He will go by train. This is a train. From New York State to California is a long journey.



What will he take with him to California? He will take some shirts.

He will take some socks.





He will not take old socks. Old socks have holes in them.

He will take new socks. New socks have no holes in them.



These trousers have a hole in them.
They are old trousers.



He will take some shoes.



He will put them in a shoe bag.



The shoe bag will keep the other things clean.



The bag is between the shoes and the shirt. The shoes will not make the shirt dirty.

My hands are dirty.



My hands are clean.



This cloth is dirty.



This cloth is clean.



This plate is clean.



This plate is dirty.



His face is dirty.



His face is clean.



The plate is dirty but the cloth is clean.





Now the cloth is dirty but the plate is clean.





This is a basin.



This is warm water in it.

This is soap.



What is she doing?



She is washing her hands with soap and warm water.



Her hands are wet now but they are clean. They were dirty.



What is she doing? She is drying her hands on a cloth.

Her hands were wet.

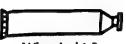




Now they are dry. They were dirty. Now they are clean.

mmy

What is this?
It is a brush.
It is a toothbrush.



What is this? It is toothpaste.

She is putting some toothpaste on the brush.



Now she is brushing her teeth.



Her teeth will be clean. They will be clean and white. And this?

It is a brush. It is a hairbrush.

She is brushing her hair.



Now she is combing her hair.



What are these?

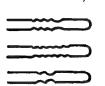
They are pins.

One pin is very like another pin.

This pin

is like this pin.

But they are two pins. They are not the same pin. They are different pins.



These are three hairpins. They are different hairpins. She has a hairpin in her hand.
She is putting it in her hair.



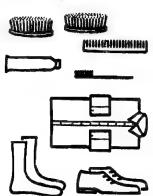


Now it is in her hair. It was in her hand. It is in her hair now. But it is the same hairpin.



He is brushing his hair. He does not put pins in his hair.

Mrs. Smith put some shirts and some socks and shoes (in a shoe bag) and a comb and brushes and toothpaste and soap and a wash cloth in Mr. Smith's bag. She put all these things in his bag.



Mr. Smith will go to the station in a taxi.



This is a taxi.

Mr. Smith is getting into it.

He has his bag with him.



This is the station.
The taxi is in front of the station.
The time is 8:00.
The train will go at 8:30.

Mr. Smith is getting out of the taxi.



Now he is going into the station.



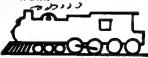
This is the waiting room in the station.



Those men and women on the seats in the waiting room are waiting. They are waiting for their trains. Here is a train.



This is the engine of a train.



These are rails. The train goes on these rails. It is a railroad train.





Here is the ticket office in the station.

Mr. Smith got his ticket here.

Here is his ticket. He gave \$132.35 for his ticket.







These are tickets.

How much was his ticket for the journey to Los Angeles? It was one hundred and thirty-two dollars and thirty-five cents (\$132.35).



How long is the journey? Four days.
Which days will he be on the train?
He will be on the train Sunday, Monday, Tuesday, Wednesday.
The other days of the week are Thursday, Friday, Saturday.

How much money did he take with him for his journey? He took five hundred and nineteen dollars (\$519.00). Much money: \$5000 Little money:\$5 Mr. Smith has friends in California.



Mr. Smith His friends Here are his friends. He and his friends are shaking hands. (See page 254) His friends were waiting for him at the station.





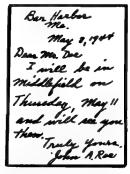
They say, "Did you have a good journey?" He says, "Yes, but it was a long journey."



His friend says, "Let me have your bag, please." He will go with his friends to their house.



This is a letter: a.
These are letters: a, b, c.
This is a word: man.
Three letters make
the word man.
The man is writing a
letter.
He is writing on paper
with a pen.



This is the letter:
It is in Mr. Roe's writing.
Mr. Roe will send the
letter to Mr. Doe.

Here is the letter ready for the post.

Here is the stamp.

Mr Rehard B. Doc Main, Street Muddlefield Mass.

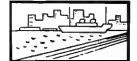
Mr. Doe's name and street and town are on the letter. Mass. is short for Massachusetts. Middlefield is in Massachusetts. This is the back of the letter.

Mr. Roe's name, and the town where he is living



are on the back of the letter.

Me. is short for Maine. Bar Harbor is in Maine. Massachusetts and Maine are two states of the United States of America. Mr. Smith is writing a card to Mrs. Smith. He is in San Francisco. On one side of the card is a picture of the harbor. Here is the picture. This is a picture post card.



Here is the other side of the card.

Mr. Smith is putting Mrs. Smith's name on it.



He will put her street under the name. He will put her town under the street. Then he will put the state where her town is.

Now the card is ready for the post.

Lea Many. That a good Jonary and will send you a long latter	Mare Haden Sauth 19 Sauth St. Gent Town, 28
Jone John	Plan York State

There is a stamp on the card.

Mrs. Smith's name and street and town are on the right hand side of the card.

Mrs. Smith's town is in New York State. Mr. Smith is taking the card to the Post Office. He is going up the steps.

POST OFFICE

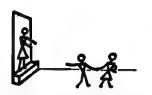


He will put the card in the letter box on the wall of the Post Office. He is sending the card to Mrs. Smith. This morning Mrs. Smith got the card which Mr. Smith sent to her from San Francisco.
She is reading it now. She is reading: "I had a good journey...."



Reading and writing are parts of our education.
We get a great part of our education at school.
These boys and girls are at school. The teacher is teaching them.





Mrs. Smith is sending Jane and Tom to school. They will be at school before nine.
They get good teaching at school.

At school, Tom and Jane are learning. They were reading and now they are writing.



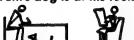
Tam is writing the word learning on the board. The teacher is teaching him the word learning.

Now Tom and Jane are back from school, Jane is reading a story.

It is eight-thirty. Tom

is writing at the table.

Tom's dog is at his feet.



Mrs. Smith is reading the newspaper.





Now Mrs. Smith is writing a letter to Mr. Smith. She sends love. from Tom and Jane to their father.



She will send the letter to Mr. Smith.





She has the letter in her hand.

Now she is sending the letter.





QUESTIONS

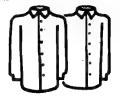
a What are these?



What is this boy doing?



b What are these?



What is the man doing?



c What are these?



What is the girl



d What is this?



What is the woman





QUESTIONS

- a On page 133, where did Mr. Smith get his ticket?
- b How much was the ticket?

- c How long was the journey to Los Angeles?
- d Did he go in an airplane?

- e What did his friends say to him when they saw him?
- f What did he say on the card which he sent to Mrs. Smith?

- g What are Tom and Jane learning at school?
- h What did Mrs. Smith send to Mr. Smith from Tom and Jane?

Answers are on page 148.

This is a plate.
The plate is round.



This is an orange.
The orange is round.



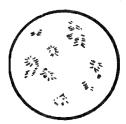
The face of the clock is round.
The hands of the clock go round.

This is the earth.



The earth is round.

This is the moon.

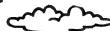


The moon is round.

This is the sun.



This is the sky.



This is a cloud in the sky.

This is the earth.

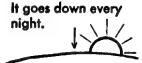
The sun comes up in the East.



It comes up every morning.



The sun goes down in the West. \ | /



What is the time? It is five-eight A.M.



What is the time? It is five-twenty (5:20) P.M.





The sun is going down, now at five-twenty (5:20) P.M.

Yesterday the sun came up at five-seven (5:07)

A.M. and went down at eight-nineteen (8:19) P.M.

Today the sun came up at five-six (5:06) A.M. and will go down at eight-twenty (8:20) P.M.

Tomorrow it will come up at five-five (5:05)

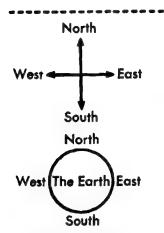
A.M. and will go down at eight twenty-one (8:21).

This is night.

This is the earth.
That is a star.

This is morning.

The sun is coming up.



North, South, East, West are four directions.

There are twenty-four hours in one day.
Twenty-four hours make one day.
Two and two make four.
Three and five make eight.
What do five and six make?
Do they make ten, or eleven, or twelve?
That is a question.
The answer is "Eleven."

Say these numbers: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
What number comes after 12?
Thirteen.
What comes after 13?
Fourteen.
What comes after 14?
Fifteen.

What numbers come after 15? Sixteen 16 Seventeen 17 Eighteen 18 Nineteen 19 Twenty 20

Twenty 20 Twenty-one 21
Thirty 30 Thirty-one 31
Forty 40 Forty-one 41
Fifty 50 Fifty-one 51
Sixty 60 Seventy 70

Eighty 80 Ninety 90 A hundred 100 A hundred and one 101 A thousand 1000 A million 1,000,000

WHAT ARE THESE THINGS?



Answers are on page 149.

QUESTIONS

- a What do seven and eleven make? What do twenty and forty make? What do thirteen and thirty make? What do two hundred and three and three hundred and four make?
- b Where does the sun come up and where does it go down? Does day come after night? Does night come after day?

Mr. Tom S. Green 20 East Street MuddleDown ON 10

- c This is a letter. Where do we put Mr. Green's street and town and state on the letter?
- d Tom's work at school is learning. He is a learner. What is the teacher's work?

Answers are on page 149.

Answers to questions on pages 140-141.

Page 140

- a They are shoes. He is putting his shoes on his feet.
- They are toothpaste and a toothbrush.
 She is brushing her teeth.
- b They are shirts. He is putting his things in his bag.
- d It is soap. She is washing her hands.

Page 141

- a He got his ticket at the ticket office in the station.
- The journey was four days long.
- e They said, "Did you have a good journey?"
- g They are learning reading and writing at school.

- b The ticket was \$132.35.
- d No. He did not go in an airplane. He went in a train.
- f He said, "I had a good journey and will send you a long letter tomorrow. Love. John."
- h She sent love from Tom and Jane.

Answers to questions on pages 146-147.

Page 146

a	a bed	ь	a bag	c	a sock
d	a stocking	е	a shoe	f	a hairbrush
g	a toothbrush	h	a comb	ī	a key
ĭ	a lock	k	a hairpin		a fork
m	an engine	n	a plate	0	two pins
р	a pen	q	rails	r	a card
5	a stamp	ť	a flame	U	a frame
٧	a hook	w	a book	х	a bell
v	a bottle	-	a alove		

Page 147

- a Eighteen. Sixty.
 Forty-three. Five hundred and seven.
- c We put his street under his name and we put the name of the town under the name of the street.

 And under that we put the name of the state.
- b The sun comes up in the East and goes down in the West. Yes, day comes after night. Yes, night comes after day.
- d The teacher's work is teaching.

This boy's name is Tom.



This girl's name is Jane.



Tom is making something.



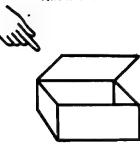
Jane is saying, "What are you making, Tom?"



Tom is saying, "I am making a house."

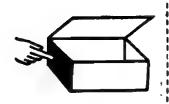


This is a box.



This is one side of the box.

This is the opposite side of the box.





This is the front of the box.

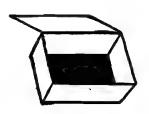
And this is the back of the box.





This is the floor of the box.

And this is the cover of the box.





Now this side will be one wall of the house.



This will be the opposite wall of the house.

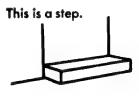


I will put another window in this opposite wall.

The front of the box will be the front of the house.



I will put a step under the door.



These are steps.

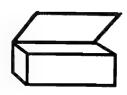


Jane said, "A house has a roof. Will you put a roof on the house? How will you make the roof?"



I will make the roof from the cover of the box,





No. There is not enough wood in the cover.

The cover is not long enough.
It is not wide enough.

How long is the cover?

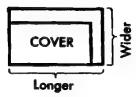


How wide is the cover?

I am measuring it.



Here is a wider bit of wood.



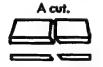
It is wider and it is longer.

I will make the roof from this other bit of wood.



I will make a cut in this wood.

I will make a cut at this angle.



This is an angle.



This is a This is another right angle.

"What are you doing, Tom?"
"I am measuring the wood."

It is good wood.

This is a measure.



We get wood from trees.

These are trees.



Some wood is hard.
Some wood is soft.

This is a tree.



We get hard wood from some trees.

They give hard wood to us.

Other trees give soft wood to us.



Now I am making a cut at this angle in this bit of wood.



The blade is going through the wood.

This is my knife.



This is the blade of my knife.

I am making a line on the wood.

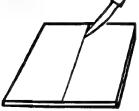
I am making a line with



This is the pencil.



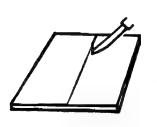
"Keep on the line when you are cutting. Don't go off it."



Oh! You are going off the line!
The cut is not on the line.



That is bad! The cut is off the line.



You did that! You gave a push to the table.



No, I did not! Your knife went off the line.



Yes. It went off the line.



It's not very bad.

the And here line. is the cut.

a straight line

a bent line

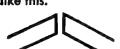
Tom is making another, attempt.

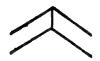


That is better. The cut is straight. The blade of the knife went straight. Goodl Now I have these two bits of wood.



I will put them together like this.





There is the roof of the house.

Now I will put the two parts of the roof together with nails.

These are nails,





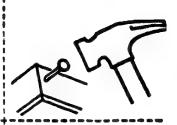
I will make a hole through this part of the roof into the other part of the roof.





Tom is making the holes for the nails.

Now he is putting the nails in with his hammer.



Now the two parts of the roof are together.



The roof is ready.









Is this line long?

This line is longer.

Is this bit of wood strong?



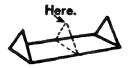
This bit of wood is stronger.

Here are the supports for the roof.



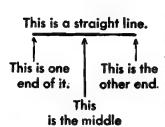
Will you put another support for it in the middle?

Where?



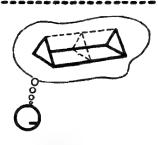
In the middle.

Yes, that is better.



This is a bent line.

of it.



That will be better. That will make the roof stronger.

Jane is making something.



What are you doing, Jane?

I am making a coat and trousers.



Here are the trousers.



Here is the coat.



"Has your coat a collar?"



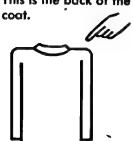
"Yes, it has. Here is the collar."

This is the front of the coat.

Here is the collar of the coat.



This is the back of the



This is one side of it.



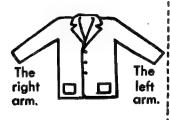
This is one pocket of it.

Here is the other side.





These are the arms of the coat.



These are the buttons of the coat.



This is a button.



This is a button-hole.



This is a needle.

This is thread.



What are you doing with your needle now?

I am putting this button on the coat.



And I am making the button-holes.



The girl will put the end of the thread through the needle.



She has the needle in the fingers of one hand and the thread in the fingers of the other hand.

This is the end of the thread.

This is the hole in the needle.

It is the eye of the needle.

The end of the thread is not going straight. It is not going through the hole in the needle.





The thread did not go through the needle. It is not through the hole in the needle now. It is on one side of the needle.



It is on this side of the needle.



Now the girl is doing it again.
Is the end of the thread through the hole?
No, it is not. If is on the other side of the needle.

The girl is making another attempt.
This time the thread will go through the hole. The end of the thread is straight.



It went through. The girl is taking the end of the thread in her fingers. The thread is through the needle.



Where are your scissors?
Here they are.

Narrow? This is a narrow street.

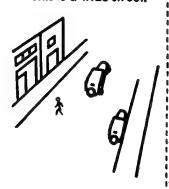


This blade is narrow.

This blade is wide.



This is a wide street.







These trousers are narrow.



a These are two walls.



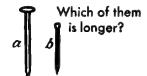
Which of them is thicker? Is wall A or wall B thicker?

b These are two cuts.



Which of them is wider? Is cut A or cut B wider?

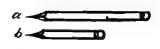
c These are two nails.



d Which of these two men is stronger?



e Which of these two pencils is shorter?



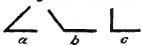
f Which of these two cards is longer?





Which is wider?

g Which of these three angles is a right angle?



h Which of these things are broken?



Answers are on page 174.

QUESTIONS

a What is he doing?



b What is she doing?



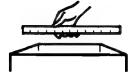
c What is he doing?



d What is he doing



e What is he doing?



f What is she doing?



g What is she doing now?



h And what is she doing now?



Answers are on page 174,

QUESTIONS



- What are these things?
- C Which of them go on their feet?
- B Which of them go through the air?
- D Which of them go on the water? Answers are on page 174.

Answers to questions on pages 171-173.

Page 171

- a Wall B is thicker.
- c Nail A is longer.
- e Pencil B is shorter.
- g Angle C is a right angle.

Page 172

- a He is going up the steps.
- c He is putting a nail in with a hammer.
- e He is measuring a box.
- g She is taking the end of the thread between her finger and thumb.

- b Cut B is wider.
- d The man who is on his feet is stronger.
- f Card 8 is longer. Card A is wider.
- h The cup, the hammer, and the plate are broken.
- b She is going down the steps.
- d He is taking a nail out with a hammer.
- f She is putting a thread through the hole in a needle.
- h She is putting a button on with a needle and thread.

Page 173

- b its engine A a a train plane d a seat e a ship f a flower a mountains h trees a cloud i a star k the sun I the moon m a pig n a sheep o a horse D G COW r a goat a a doa s a coat t a bird u trousers Y a cup w a knife X G Spoon v scissors
- B Airplanes and birds go through the air.
- C Pigs, sheep, horses, cows, dogs, birds, and goats go on their feet.
- D Ships and some birds go on the water,

The earth goes round in twenty-four hours,





There are twenty-four hours in every day. The sun comes up and goes down every day because the earth is turning round.

The earth goes round the sun in a year.



There are three hundred and sixty-five days in a year.
Three hundred and sixty-five days make a year.

There are seven days in a week. Seven days make a week. Here are the names of the days of the week: Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday. Monday is before Tuesday.

Tuesday is after Monday.

There are thirty-one or thirty or twenty-eight days in a month.
Here are the names of the months:
January (31)
February (28)
March (31)
April (30)
May (31)

June (30)
July (31)
August (31)
September (30)
October (31)
November (30)
December (31),
January is before
February . . .
February is after
January . . .

These are the winter months: December, January, February. These are the summer months: June, July, August.
These are the spring months: March, April, May.
These are the fall

months: September, October, November. In the North, the earth is cold in the winter.
The wind is cold.
Snow comes down from the sky.
There are no leaves on the trees.
There is ice over the water.
The days are short.



In the North, the earth and the air are warm in the summer. There are leaves on the trees. The days are long. There is no ice or snow.





In the spring the leaves come out on the trees. Plants come up out of the earth, and flowers come out on the plants.



In the fall, the leaves come down from the branches of the trees. Fall is the time of the fall of the leaves. They are coming down. They are falling. In the spring the days, get longer.
Every day is longer than the day before it.
In the spring today is longer than yesterday.

In the fall the days get shorter. Every day is shorter than the day before it. In the fall tomorrow will be shorter than today.

This line
is longer than
this line.

The time between three and four is shorter than the time between three and five.

One hour is a shorter time than two hours.

Fifteen minutes make a quarter of an hour.



Thirty minutes make half an hour.



Forty-five minutes make three-quarters of an hour.

Which is shorter—a quarter of an hour or half an hour?

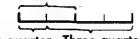
Which is shorter—the minute hand or the hour hand of a clock?



This is an inch.

The distance from A to B is one inch.

Half an inch is a shorter distance than an inch.



A quarter Three-quarters of an inch of an inch

Twelve inches make a foot.



How long is it? It is ten inches long. Three feet make a yard.

This is a yard measure.

There are thirty-six inches in a yard.

These are feet.



They are not twelve inches long.

Seventeen hundred and sixty yards (1760) make a mile. In half a mile there are eight hundred and eighty yards. Miles, yards, feet, and inches are measures of distance.



What are this man-and this girl doing? They are taking a walk.

In one hour he will go two miles, and she will go four miles. He is slow. She is quick. She is quicker than he is. He is slower than she is. This is a train.



horses or men.

This is a plane.

Planes are quicker than trains or horses or men.

This baby is one year old.

This boy is ten years old.

This man is thirty years old.

This old man is a ninety years old.

That is a stick in his hand.

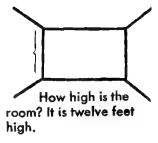
The baby is very young. How old is he? He is one year old.
The old man is very old. How old is he? He is ninety years old.

This box is four inches long and three inches wide and two inches high.



How long is it? It is four inches long.

This room is twenty feet long and sixteen feet wide and twelve feet high.



This is a short coat.



This is a thin book.



This is a longer coat.



This is a thicker book.



This is the longest coat of the three.



This is the thickest book of the three.



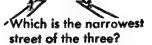
This is a narrow street.



This is a wider street.



This is the widest street of the three.



This is a dirty face.



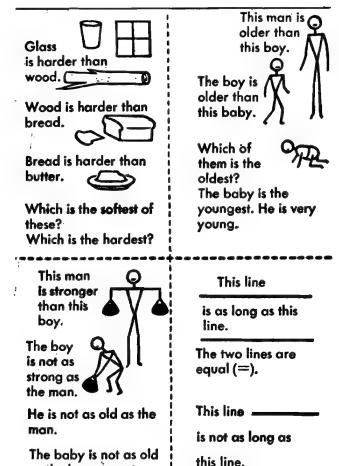
This is a cleaner face.



This is the cleanest face of the three.



Which is the dirtiest face?



They are not equal.

as the boy or as strong

as the boy.

A train may go eighty (80) miles in an hour.

An airplane may go three hundred (300) miles in an hour.

Trains and airplanes . are different sorts (see page 106) of transport.

What are some other sorts of transport?



Ships are another sort of transport. How far may a quick ship go in an hour? A quick ship may go thirty miles in an hour.



Automobiles

are an other sort of transport.

Airplanes, trains, ships, automobiles

take us from one place to another.

We may go on our feet from one place to another.



When we go on our feet, we are walking.

Or we may go in a train or in a ship or in an automobile or in a plane.

Some places are near to one another.

0 0

Places in Washington are near to one another.

Some places are far from one another.

The distance from one place to another is not far.

But some places in the United States are far from one another.

This is a map of North America. Mackenzie Riv Ottawa New York Los Angeles **Washington** Mississippi River These are mountains. Men go up mountains. Mountains are high. Trains go on railroads. These are ****** railroads. A road These are roads.

A river

An island

Ottawa, Washington, Mexico City, New York, and Los Angeles are towns.



The government of Canada is in Ottawa.

The government of the United States is in Washington.

The government of Mexico is in Mexico City.

How far is Ottawa from Mexico City? The distance from Ottawa to Mexico City is about twenty-three hundred miles. How far is New York from Los Angeles? The distance between New York and Los Angeles is about twenty-five hundred miles.

How far is the mouth of the Mackenzie River from the mouth of the Mississippi?
The distance is about 3300 miles.
The mouth of a river is the place where it goes into the sea.

This is the earth. We are seeing it from the north.



There is more land than water on this side of the earth.

This is the earth. We are seeing it from the south.

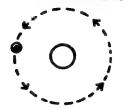


There is more water than land on this side.

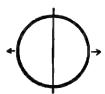
This is the moon.



The moon goes round the earth in a month.

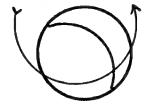


Do we ever see the other side of the moon? No.



We see the same side of the moon at all times. Why?

We see the same side at all times because the moon is turning round,



The moon •

The earth

It is going round the earth and it is turning round itself. It keeps the same side to the earth.

We see the same side of the moon at all times. Sometimes we see it like this.

One half of the moon is bright.

This is a half moon.

Sometimes we see the moon like this.

This part
of the moon
is
dark.

This part
of it
is
bright.

This is a quarter moon.

Sometimes we see it like this.

This is a new moon.



This is a new hat.



This is an old hat.



And sometimes we see it like this.

This is a full moon.



This glass is full.



This glass is not full.



These are the changes of the moon.



But at all times we see the same side of the moon. Change? What is that?

Here is a change in the direction of this line.



And here is another change.





Here are two trains. The man was in this ⁴ train.

He is going to the other train.

He is making a change. He is changing trains.



The potatoes were hard. After a time they were soft. There was a change in the potatoes.



This water was cold.



Now it is boiling. That is exchange.



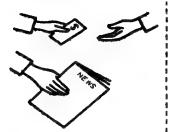
There was a change in the water.



In the summer the leaves are on the trees.



in the fall the leaves come down off the trees. That is a change.



I took a newspaper and gave a dollar (\$1) to the man, He took the dollar and he gave

a half dollar
and a quarter
(dollar)
and twenty

This is the money which he gave to me with the paper.

cents

The price of the paper was five cents. I got the paper and ninety-five cents from him.

\$1.00 — 100 cents Paper — <u>5 cents</u> 95 cents That money was my change.
I had a dollar.
After I got the paper I had the paper and ninety-five cents. I did not have the dollar.
That was a change.

QUESTIONS

a Is the boy nearer to the woman than the girl is?





Is the girl nearer to the boy than to the woman? b Which of these two is farther from the tree?





Is the boy farther from the tree than from the girl?

c Which of these two glasses is full of water, the glass to the right or the glass to the left?





d Is there more land than water on the south side of the earth?

QUESTIONS



- a Which of these is a half moon, which is a full moon, which is a quarter moon, and which is a new moon?
- b I got a book. I gave three dollars to the man in the bookstore. He gave me the book and fifty cents. What was the price of the book? How much was the book? How much change did he give me?

- c How far may a quick train go in an hour? How far may you go on your feet in an hour, four miles or forty?
- d What are some different sorts of transport? Which is the quickest sort of transport?

Answers are on page 194.

Answers to questions on pages 192-193.

Page 192

- a No, the girl is nearer to the woman. Yes, the girl is nearer to the boy than to the woman.
- The glass to the left is full of water.
- b The girl is farther from the tree. Yes, the boy is farther from the tree than from the girl.
- d No. There is more water than land on the south side of the earth.

Page 193

- a C is a half moon;
 B is a full moon;
 D is a quarter moon;
 and A is a new moon.
- A quick train may go a hundred miles in an hour. I may go four miles but not forty.
- b The price of the book was \$2.50. It was \$2.50. He gave me 50 cents change.
- d Ships, trains, horses and carriages, and airplanes are different sorts of transport. The airplane is the quickest of these.

The distance through the earth from North to South is seven thousand nine hundred (7900) miles.

niles.

The distance round the earth is twenty-four thousand nine hundred (24,900) miles,

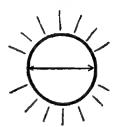
How far is the moon from the earth? It is two hundred and forty thousand (240,000) miles from the earth.

How far is the sun from the earth? The distance of the sun from the earth is ninety-three million (93,000,000) miles.

What is that in your hand? It is a ball. The ball is small.

What is that in the sky? It is the sun. The sun is great. The sun is a great ball of fire.

What is the size of the sun? It is 864,000 miles through from one side to the other.



What is the size of the moon?
It is two thousand one hundred and sixty (2160) miles through from one side to the other.
Is the moon smaller than the earth?
Is the earth smaller than the sun?
Is the sun greater than the moon?

The moon is near the earth. The earth is far from the sun.
New York is near
Washington. San
Francisco is far from
Washington.





Are the stars smaller than the sun?
No. Some of the stars are much greater than the sun.
Are they nearer than the sun?
No, they are much farther than the sun.



How far from the earth is the nearest star? It is over four light-years from the earth.
What is a light-year? It is the distance which light goes in a year.

This is a flame. It sends out light.



Light goes 186,300 miles in a second. How far does it go in a year?

The sun sends out light.
The light goes out from
the sun in every
direction.



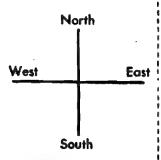
It goes about 6,000,000,000,000 miles in a year.

A light-year is 6,000,000,000,000 miles.

The nearest star is over four light-years from the earth.

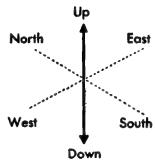
The nearest star is 25,000,000,000,000 miles from the earth. The nearest stars are very far from us. Some of the stars are very much farther. The farthest stars are thousands of light-years from us.

The sun sends its light out in every direction.



These are four directions.

Up and down are two other directions.



This boy has six apples in his hands.

He is on a branch of a tree.

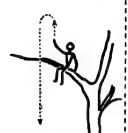
He will send the six apples in different directions.

He sent one apple north, another apple south, another east, and another west.



He sent another apple down.

He sent five apples in five directions.



He sent the last apple up. But then it came down.

Why did it come down?

The first apple went north and then it came down. The other apples went south and east and west and then they all came down to the earth.



They all came down to the earth? Why did they come down?

The first apple ...
The last apple ...
What is "the first" ...?
What is "the last" ...?

These men are in a line. This is the first man.



This is the last man.



Here are three dogs. Which is the first dog? Which is the last dog? The other dog is the dog in the middle. He is between the first dog and the last dog. Two of the dogs are white.

The other dog is black. The dog in the middle is black.



Here are two bodies.
One is a great body.
It is the earth.
The other is a small body. It is an apple.
The apple is coming down to the earth.
Why?

It is coming down because there is an attraction between the two bodies. The attraction between

The attraction between them makes the apple come down.



All bodies which have weight have an attraction for one another.

Here are two bodies. These are springs.



Which body has the greater weight?

Here are two men.



This man

His body is thin.



This man

His body is fat.

Which man's weight is greater?



A scale is an instrument for measuring weight.

Which man's weight is greater?
They are on the scale.

The weight of the thin man is 100 pounds.



The weight of the fat man is 200 pounds.



Clocks are instruments for measuring time.

This is a watch.



Watches and clocks are instruments for measuring time.

This is an instrument for measuring heat.

A yard
measure is an
instrument for
measuring
distance.



Inches, feet, yards, metres, and miles are measures of distance. All bodies have an attraction for one another.

If the bodies go farther from one another the attraction gets smaller.



0→ ←0

If the bodies are great the attraction between them is great.

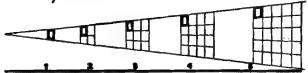
Distance Attraction
1 1
2 1/4
3 1/9
4 1/16
5 1/25

·Here is a square.

O→ ←O
If the bodies are small the attraction is small.

It sends out light in every direction.

Here is a light.



I put the square at different distances from the light. At distance 1, it gets all the light which is going out between the lines. At distance 2, it gets one-fourth of the light. At distance 5, it gets one twenty-fifth. It is the same with the attraction between bodies.



What keeps the moon up in the sky?
Why does not the moon come down?

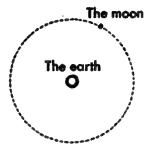
The moon is a great body. Its weight is great.

The earth is a great body. Its weight is eighty-one times the weight of the moon. Two times three is six. $2 \times 3 = 6$

The moon and the earth are not very far from one another.
The distance between them is about two hundred and thirty-nine thousand (239,000) miles.



Because they are great bodies and near one another, the attraction between the moon and the earth is very great. Why does the moon not come down to the earth? That is a question. The answer is: "Because it is going round the earth."



This is a cord in my hand. The cord has a weight at its end.



I make the weight go round on the cord.



I keep the end of the cord in my hand.

Now I let the end of the cord in my hand go.

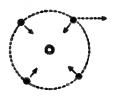


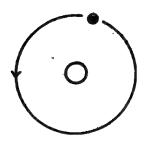
The weight goes off in a straight line. It takes the cord with it.

The pull of the cord in my hand kept the weight from going off in a straight line.



The attraction between the earth and the moon keeps the moon from going off in a straight line.





The moon goes round and round the earth.. month after month

It does not get farther from the earth



or nearer to the earth.



It keeps about the same distance from the earth.

Here is Sir Isaac Newton, the great man of science. Newton had a great mind.



He is under an apple tree.

It is the year 1666.

Those are apples which are over his head.

The seat has three legs.



Here is an apple which was over his head. The apple was on a branch of the tree.



The apple came off the branch.

It came down.

It came down on Newton's head. That is the story.

The story may be true or it may not be true.



But that is the story. It comes from the great writer, Voltaire. True?

2+2=4. That is true.

2 + 2 = 5. That is not

true.

It is a false statement.
"Apples are fruit"

"Apples are fruit." That statement is true.

"Apples are animals."
That statement is false.

False = not true

Short = not long Shut = not open



In this story the fall of the apple on Newton's head was the cause of the idea. The blow which the apple gave to Newton's head gave an idea to Newton. It made a question come into Newton's mind.





This was the question: "Have the fall of the apple and the motion of the moon the same cause?"

Here is a ball, It is hanging on a cord.

I will give a blow to the ball with this stick.

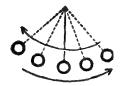


The ball was not in motion before the blow. It was at rest. It was hanging on the end of the cord.

The blow was the cause of the motion.



I gave the blow.
Now the ball is in motion.
What was the cause of the motion?
The blow of the stick was the cause of the motion.



After the blow the ball was in motion.
The motion came from the blow.
The motion was the effect of the blow.

Which of the statements on this page are true and which are false? Put a T before the true statements and an F before the false.

- a 1. The earth is in motion.
 - The earth is turning round.
 - 3. The earth goes round the moon.
- c 1. The attraction between two bodies gets greater as they go farther from one another.
 - 2. The attraction between two bodies is greater when they are nearer.
 - 3. When two great bodies are near one another the attraction between them is small.

- **b** 1. The moon is greater than the sun.
 - 2. The sun is colder than the moon.
 - 3. The moon goes round the earth.
- d 1. When a blow puts a ball in motion, the blow is the cause of the motion.
 - 2. When a blow puts a ball in motion, the motion is the effect of the blow.
 - 3. When a body is in motion it is at rest.

Answers are on page 212.

QUESTIONS

Milk comes from a cow. Heat comes from the sun, or a fire. Where do these things come from?

a potatoes. b cheese c light d letters e flowers f snow g oranges h meat i eggs

Which of these things have a face?

a man a dog a bone a fridge a clock a tree a goat a bird an airplane a river a table

Which of them have a mouth? Which of them have hands? Which of them have a door?

Answers are on page 212.

QUESTIONS

- a We put a bottle on a shelf.
 Which of these
 things may we put
 on a shelf:
 a book, a mountain,
 a cup, a box, a star,
 a clock, a horse,
 a distance, a plate,
 a carriage, a river,
 a house, a spoon,
 a garden?
- b We put potatoes in a pot. Which of these things may we put in a pot: water, windows, food, streets, tables, milk, soup, trains, salt, colors, eggs, wood, ideas?

- c We put money in our pockets.
 Which of these things may we put in our pockets: pipes, education, letters, pencils, offices, islands, maps, hands, governments, buttons, watches, distance, balls, roofs, knives?
- d We put our hats on.
 Which of these things
 may we put on: feet,
 boots, seats, gloves,
 shirts, walls, directions,
 coats, buildings, soap,
 scissors, collars, locks,
 socks, trousers,
 branches, trays, shoes,
 apples?

Answers are on page 212.

Answers to questions on pages 209-211.

Page 209

- a 1. T b 1. F c 1. F 2. T 2. F 2. T 3. F 3. T 3. F
- d 1. T 2. T 3. F

. .

Page 210
a from the roots b from milk c from the sun or flames
d from persons e from plants or from seeds clouds
g from orange h from animals i from birds

A man, a dog, a clock, a goat, a bird may have a face.

A man, a dog, a goat, a bird, a river may have a mouth.

A man and a clock may have hands.

A fridge and a plane may have a door.

Page 211

- a a book, a cup, a box, a clock, a plate, a spoon.
- b water, food, milk, soup, salt, eggs.
- c pipes, letters, pencils, maps, hands, buttons, watches, balls, knives.
- d boots, gloves, shirts, coats, collars, socks, trousers, shoes.



What is this?
The man has an umbrella in his hand. It is open.
He has it over his head.
Why?

Her

Because it is raining.
Water is coming down
from the sky.
The water is rain.
Rain is coming down,
Rain is falling.
It is raining.

The rain made the man put up his umbrella. That was the effect of the rain. Today is Monday. Yesterday (Sunday) the sun was bright. There were no clouds in the sky.



Today there are dark clouds in the sky.
They come between us and the sun.
The dark clouds keep the light of the sun from us.

The rain comes down from the clouds on me. It comes down on my head.



The rain comes down from the clouds on us. It comes down on our heads.



Why is it raining today? Yesterday the weather was good. The sun was bright,

The air was warm.

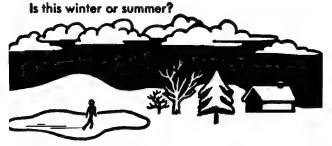


Today the weather is bad. The rain is coming down. The wind is blowing. It is cold and the rain makes us wet.



Tomorrow the weather may be worse.
It may be very cold. All the water may be ice.
Snow may be coming down making everything white.

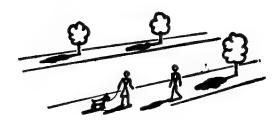
Will tomorrow be like this?



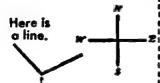
Or tomorrow the weather may be better.

The sun may be bright again. The air may be warm again and the streets may be dry again.

Will tomorrow be like this?



What are the causes of these changes in the weather? Change? What is that?(See page 190.)



Here is a change in the direction of the line.

This bird was wet. It was in the rain.



Now it is dry

That is a change. It was wet. It is dry.



What is the cause of these changes in the weather?

Good Bad Dry Wet Warm Cold Weather

Why are there these changes of weather?

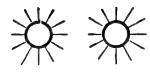
There is not one cause only. There are numbers of causes. Changes in the heat which comes to us from the sun are one cause of changes of weather.

The amount of heat which the earth gets from the sun is different from time to time.

There are changes in the sun.

If you take a look at the sun through a bit of dark glass you may see small marks on the face of the sun.





Amount? One dollar is a small amount of money. A million dollars is a great amount of money.

A drop of rain is a very small amount of water.







There is a great amount of water in the sea.
This is the sea.
Those are ships which, are on the sea.

Changes in the heat which comes to the earth from the sun are one cause of changes in the weather. This discovery is new. A man of science made the discovery in 1944.

He made it by measuring the heat which comes to the earth every day from the sun. The amount of heat is different from day to day.

On some days the sun sends more heat to the earth. On other days it sends less heat to the earth.

There is more water in this alass than in that.





Men are making new discoveries every day. Columbus made the discovery of America in 1492. Columbus came to America in his ship in 1492.



What were some other great discoveries?
One of them was fire.



Fire is of very great use to men. It gives us heat.

Another great discovery was the wheel.

Wheels are round.





They are of very great use to man.

Another great discovery was clothing.



What are these? These are some other sorts of clothing.



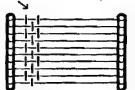


The making of cloth was a great discovery. This is how we make cloth.

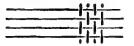


These are threads. (See page 167.)
They go across from one side to the other of a frame.

These are other threads.



They go across the first threads.



They go under and over them.

This is cloth.



This is a roll of cloth. We make clothing of cloth. We make cloth of threads.

We make threads from wool and cotton and silk.





We get wool from sheep.



Wool is the thick warm hair of sheep. Men take the wool off the sheep's back with scissors.



We make threads from the wool by twisting the hairs round and round.

That wheel is going round.

It is giving a twist to the thread.. It is twisting the thread.

₩ /

We get cotton from the cotton plant.



Cotton is the soft white hair round the seeds of the plant.

These are different sorts of seeds.



Plants come up from seeds which come from other plants of the same sort.

We get silk from the silkworm.



This worm makes a soft strong thread of silk and puts it round itself like a coat.

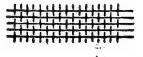


Wool, cotton, and silk are different sorts of cloth. We make clothing of all these sorts of cloth. (See page 81.)

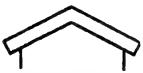


When the weather is cold we put on thick warm wool clothing. When the weather is warm we put on thin cotton clothing. Cotton clothing is not as warm as wool clothing.

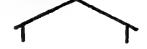
Thick clothing keeps us warm. It keeps us warmer than thin clothing.
Thick cloth keeps air in it, between the threads.
The air does not let heat go through it.



10



A thick roof keeps the heat of the house in.
A thin roof lets the heat go through it.



A thick roof keeps the heat of the sun out.

Here is a pencil. It is straight. It is not bent.



Here is a glass of water.



I put the pencil in the water.



The pencil seems bent where it goes into the water.

The pencil is straight but it seems bent.



It seems like this.



It is straight, not bent. It seems bent, not straight. Before I put the pencil in the water it seemed straight. It was straight. After I put it in the water it seemed bent.
It wasn't bent.

When it is in the water it seems bent.

When it is out of the water we see that it is straight.



Why did it seem bent when it was in the water?

This is a light.
A light sends out light.
The light which it sends
out goes in straight lines.

Here is a bit of glass. A ray of light is going through the glass. Where the light goes into the glass, it is bent.



It is bent again where it comes out of the glass into the air.

Here is your eye.



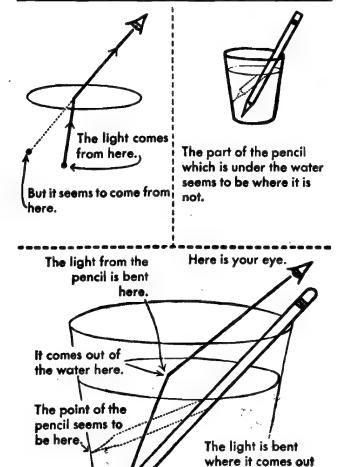
You are looking at the pencil in the glass of water.

The light from the pencil is bent where it comes out of the water into the air.



The pencil is not bent. But the light from it is bent.





of the water.

It is here.

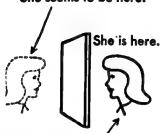
This is a looking glass.



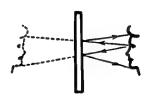
What do you see in the looking glass? I see a girl's face in the glass.

She is looking at herself in the glass.
What does she see in the looking glass?
She sees herself in the glass.

She seems to be here.



She is on this side of the glass. She seems to be on the other side of the glass. Why? Because the glass sends the light back.



There seem to be two girls in this picture. There is only one.



What is this man doing? He is working with a spade. That is his work.

What is this woman doing?



She is working with her needle. That is her work.



What is this man doing? He is making shoes. He is a shoemaker. That is his work.



These are shoes,



These are boots.

He makes boots and shoes. That is his work.



What is this man doing? He is putting paint on the door. He is painting the door. He is a painter. That is his work. This is his paint.



This is his brush.



"He puts the paint on with his paint brush.

2 3 14 26 4 10 40 This is addition,



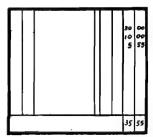
The boy is doing addition. That is his work.

This is a bank.



Bank of Huddrown Juflen dollars 115-John Jones We keep money in banks.
Banking is an important sort of business.
Men and women in banks and business houses keep accounts.

This is an account.



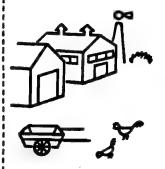
Keeping accounts is an important part of business.

Keeping accounts is one sort of work.



These are account books.

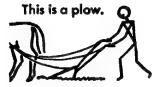
Farming is another sort of work.



This is a farm.

This is a cart.





The plow is turning up the earth.

This is a field.



The farmer is plowing the field. That is part of his work as a farmer.

The farmer has an account with his bank. He puts his money in the bank.

He keeps money in the bank.

He gets money from the bank.

The account says how much money he has in the bank.

Farming and keeping accounts are two different sorts of work.

30

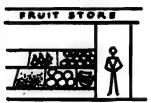
What sort of work is this man doing?
He is cutting wood.



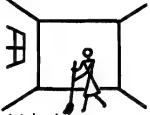


What sort of work is this woman doing? She is washing stockings and dresses.

What sort of work does this man do? He keeps a store.



It is a fruit store. He is a storekeeper. What sort of work does this woman do?
She keeps a house.



It is her house. She is a housekeeper. Put your fingers across one another like this.



I have my first and second fingers across one another.

Across?
These two lines go across one another.

My second finger is over and across my first finger.



Did you put your fingers across one another?
That is right.
You have your fingers across one another.



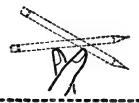
Now take a pencil and give a touch to one finger, and then a touch to the other and then put the pencil between them. Do this with your eyes shut.



You will have a strange feeling.

Are two pencils touching your fingers, or is only one pencil touching them?

Do you have the strange feeling that two pencils are there? When you are touching one finger only, you seem to be touching the other?



Why is that? Here is the answer.

MA YX

When the fingers are like this, or like this, they do their work together.



But when they are across one another they do not do their work together. Then a touch to one sometimes seems to be a touch to the other. What is their work?
What do the ends of our fingers do?
Their chief work is touching.



Those fingers are touching the cover of a book.
Touching gives us knowledge.
When our eyes are shut,

mil mil

or when we are looking in another direction, (She is touching the book)



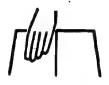
or when we are not able to see, we get knowledge through touching and feeling with our fingers.



The chief work of the ends of our fingers is touching.
Here is a man who is not able to see.

That is a Braille book which he has before him. He is reading the book with the ends of his fingers.





This other man is reading with his eyes.
He is not reading with his fingers.

Braille letters and words are like this.

PU

He is touching them with the ends of his fingers.

What are those things on his nose?
They are his glasses.

What is the work of the eyes?



Seeing. Their work is seeing.

What is the work of the ears?



Hearing. Their work is hearing.

What is the work of the legs?



Walking. Walking is their chief work.

What is the work of the mouth?



Is talking or taking in food the chief work of the mouth?





What is the work of the hands?
Taking things up, putting them down, getting things, giving things, making things.
We do things with our hands.

QUESTIONS

- a is there more water in the sea than in a river?
- c What is wool? What is cotton? Where do we get silk from?
- e What is the chief work of the eyes, the ears, the mouth, and the fingers?
- g Where does smoke come from? Where does steam come from?

- b Give the names of three great discoveries.
- d Why is thick clothing warmer than thin clothing?
- f What sorts of transport go on wheels?
- h Where do we get wood from?

Answers are on page 240.

WHAT ARE THESE THINGS? b q h

Answers are on page 240.

Answers to questions on pages 238-239.

Page 238

- a There is more water in the sea than in a river.
- c Wool is the hair of sheep. Cotton is the hair round the seeds of the cotton plant. We get silk from the silkworm.
- e The chief work of the eyes is seeing, of the ears is hearing, of the mouth is taking in food, and of the fingers is touching.
- g Smoke comes from fire. Steam comes from boiling water.

- b Fire, the wheel, and clothing were three great discoveries.
- d Because thick clothing keeps heat from going through it.
- f Carts, automobiles, and trains go on wheels.

h We get wood from trees.

Page 239

- a a cart
- c a boot
- e a skirt and a shirt
- g a fire
- i a roll of cloth

b a plow

d a looking-glass

f a wheel

h a spade

i an umbrella

Seeing and hearing and touch are three of our senses.

We get knowledge through our eyes (seeing), through our ears (hearing), and through our fingers (touching). These are three of our chief senses. Another sense is taste.

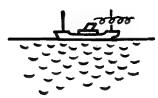
This is a man's tongue

These are his lips, ...
This is his chin.

The chief work of the tongue is tasting.

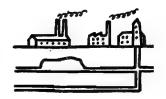


Here is some white powder on a plate. It may be salt or it may be sugar. Which is it salt or sugar? She is tasting the powder.
She has some of it on her finger.
She is putting some of the powder on her tongue. She is tasting it.



We get salt from the sea:

The water in the sea has salt in it.



We get salt from salt mines.

Some mines are deep. They go far down into the earth.

We get sugar from plants. We get it from the stems of some plants.





We get sugar from the roots of some plants.



The salt or sugar which we put in our food is a white powder.





The taste of sugar is sweet.



This is a cake.

It has white sugar on the top, Cakes with sugar on them are very sweet. This is an orange.







Some oranges are sweet. But the taste of their skin is bitter.

But to the tongue they are very different.

Salt has a salt taste. Sugar has a sweet taste.

To the eye salt and sugar seem the same. Their taste is very different.



What is the work of the nose? What do we do with our noses? She has a flower in her hand. She is smelling the flower.



Some flowers have a sweet smell. Some flowers have no smell.



This is grass.
These flowers are in a garden.
They have a sweet smell.



These are pigs.
Some pigs are dirty.
Some pigs are clean.
(See page 125.)
The smell of dirty pigs is not sweet.
It is a bad smell.

This is smoke.



Some smoke has a good smell. The smell may not be sweet, but it may be a good smell. He is smoking a pipe. Is the smell of the smoke good?

We see things with our eyes and we see their colors.

Here are some names of colors:

green blue white red yellow gray



What is the color of grass and leaves in spring?
Grass and leaves in spring are green.
What is the color of this girl's lips?
Her lips are red.

The sky is blue.







It is blue when it is clear. The color of some clouds is white. Other clouds are gray. The sun is yellow.

Sometimes when it is going down

or coming up it is red.

This flame is yellow.



We see things with our eyes. We see the sizes and colors of things. Sometimes things seem to our eyes greater or smaller than they are. They are not what they seem.

This man is tall.

This man is short.

This is a tall woman

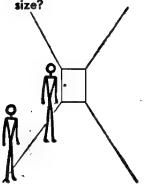


This is a short woman.

Which of them seems

Here are two men.

Do they seem the same size?



taller?
Does the man who is farther seem taller than the man who is nearer?
The pictures of them are the same size.
The lines in the picture make the man who is nearer seem shorter.

Seeing, hearing, touch, taste, and smell are "the five senses." But we have more than five senses. Which are some of the other senses?

Our sense of how warm or how cold things are is another. Here is some cold water with ice in it. It is very cold.





Here is some water in a kettle. The water is boiling. Steam is coming out of the kettle.





Here are three basins. The basin to the right has very warm water in it. The basin to the left has cold water in it. The basin in the middle has water which is not cold and not warm in it.



I put my hands in the basins at the sides. One of my hands is in the cold water; the other is in the warm water.

I keep them there for a time.

Now I am putting them together into the middle basin where the water is not cold and not warm.



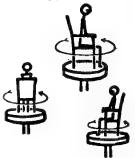
What is this?
This water seems warm to one hand and it seems cold to the other!
It is the same water.
But it seems cold and warm at the same time!

Why is this?
It is because one hand was in warm water and the other in cold water before I put them in this middle basin.

Another sense is our sense of motion. Here is a seat which goes round and round.



A man is in the seat. He is going round and round . . .



At first he has a feeling that he is in motion. He has the feeling that he is going round. The seat, with the man in it, keeps on turning round at the same rate. It does not go quicker. It does not go slower.

After a time the man has a feeling that he is not in motion. But there is no change in the rate at which the seat is turning. It is going round the same number of times a minute.



After a time, if the rate of turning is the same, the man seems to himself to be at rest (not in motion).

He is like all the men and women on the earth. We are all turning round all the time with the earth, but we seem to ourselves to be at rest.



We have no feeling that we are in motion. This is because the rate of turning is the same. The man is in motion. He seems to himself to be at rest.

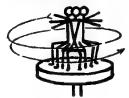


Here are three boys and a dog.
Two of the boys are taking a rest.
They are resting on their beds.
The other boy and the dog are in motion.

Now, put a stop to the motion of the seat.
When you do that the seat is at rest. The man is not in motion.



But he has a feeling that he is turning round and round. This is a picture of his feelings.



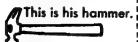
He is not turning round. But he seems to himself to be turning round. And everything round him seems to be turning round. Why is this?

our mation is the cause of our feelings of motion. Through our sense of motion we get knowledge of changes in the rate and direction of our motion.

It is because change in



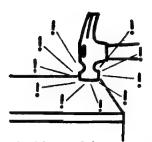
What is he doing? He is hammering.



These are nails of different sizes.



He is putting the cover on a box. He is nailing down the cover of the box. The cover is on the top of the box.



The blows of the hammer make a noise. He is making a very loud noise.



Mary has her hands over her ears. "What a noise!" She is saying, "What a noise you are making."



Some noises are loud.
These are guns.
Guns make loud noises.
Those guns make moré
noise than this gun.



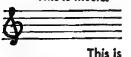


What is this? It is a whistle. It is a steam whistle. It is making a loud noise.

This boy has a pocket whistle. He is making some noise with it but not







a song.
These are

This is a high note.

This is a low note.



This is a very high mountain.

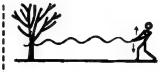
These are high mountains.

This is a high building. It is a church,

This is a low building.



Noises and songs are sounds.
What are sounds?
They are the effects of waves in the air.



These are waves in a cord. One end of the cord is fixed to a tree and the boy has the other end. He is shaking it up and down,





With every shake he sends a wave down the cord to the tree,



As the wave goes down the cord this part, which was up,



goes down. And this part, which was down, goes up.



These are waves in the air. They come to our ears.

They have effects in our ears and brains. Those effects are sounds.



Here is a brain. The part of the brain which does the most work in hearing has the word HEARING on it.

"The most"? Some things have water in them.

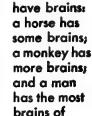
This cup has some water in it.

This bucket has more water in it.

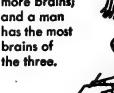








Some animals





I have two dollars.
You have twenty
dollars.
He has a thousand
dollars.
He has more money
than we have.
You have more
than I have.
He has the most money.

I have less money than he has. I have less than you have. I have the least money.

The most	\$1000	
More	\$20	Less
,	\$2	The least

This is a lower note, but it is

This is the

higher than

this note.

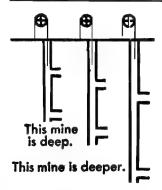
Which is the lowest note of the three?



Farming is an important sort of work.

Is it more important than banking?





This mine is the deepest of the three.

This plate has some salt on it.



This plate has more salt on it.



This plate has the most salt on it.



It has more salt on if than the other plates.



One of them is better than the others.
It is the best book of the three.

This is a bad fire.



This is a worse fire.



This is the worst fire of the three.





She is looking at herself in a looking glass.
Again and again, every day, she takes a look at herself in a glass.

Whenever she sees a looking glass she goes to it and takes a look at herself.



Because looking at herself in the glass gives her pleasure. She is beautiful. She sees that she is beautiful.



Looking at himself in the glass gives him no pleasure.
It gives him pain. Why? He sees himself. Is he beautiful?





"Pleasure"? What is that? "Pain"? What is that?

Put your finger in the flame. No, I will not. Why not? Because of the pain. Here is a nail. You put your finger nail over this nail, and I will give it a blow with this hammer.

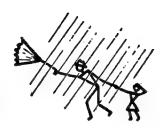


No, you will not. I see what pain is now. I see what the sense of the word "pain" is now.
This is another use of the word "sense".

That is pain. Pleasure is the opposite of pain. "Opposite"? Good is the opposite of bad.



Good weather. The day is bright. The air is warm. The sky is blue. They are happy.



Bad weather. The wind is blowing. The rain is falling. It is cold. It is wet They are unhappy.

Bright is the opposite of dark.

White is the opposite of black.



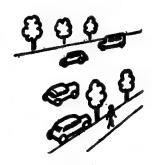


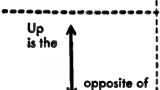
What is the opposite of dry? (See page 128.) What is the opposite of happy?





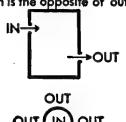
What is the opposite of narrow? Is this street narrow?

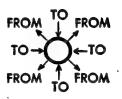




In is the opposite of out.

down.





To is the opposite of from.

Pleasure is the opposite of pain.

Beautiful things give us pleasure.



When she sees herself in the glass, she sees that she is beautiful. That gives her pleasure.

It is there because she has a feeling of pleasure.
Her pleasure is the cause of her smile.
She is saying to herself, "I am beautiful."

When I say that she is beautiful, that gives her pleasure.



There is a smile on her face now.

Why is the smile there?

She is saying to herself that she is beautiful.



A smile does not make a sound. A laugh makes a sound.



A laugh is a smile with a sound.

This is a great painting by Leonardo.



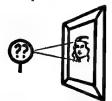
Its name is the Mona Lisa.

The picture is beautiful. That is certain.



Was the woman beautiful? Was Lisa herself beautiful? That is not certain.

I have my idea of that.



He has his idea.





She had her idea. We may have different ideas of how beautiful that woman was.

There is no measure of the beautiful.



She may or may not be beautiful.

But it is certain that she has a smile on her lips. That is certain.



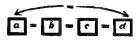
It is not certain that she is beautiful.



2 + 2 = 4. Two and two are equal to four. That is certain.

2 + 2 = 5. Two and two are not equal to five. That is certain.

It is certain that 2+2=4.



a is equal to b, and b is equal to c, and c is equal to d.

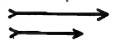
So a is equal to d.

Things which are equal to the same things are equal to one another.

Things which are like one another may be equal or they may not.



These two are like one another but they are not equal.





A smile is like a laugh. But a laugh makes a sound.



This girl is laughing. She is happy.





She has a fall. She gives a cry. Now she is crying. She is not laughing now. She is crying. Why?

Because she gave her knee a blow in her fall.





She was on her feet.



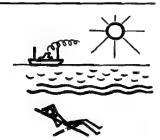
The fall was the cause of the blow to her knee.



The blow was the cause of the pain in her knee.



And the pain in her knee was the cause of her crying. Pleasure and pain are feelings.
We have feelings of pleasure and pain.
Here are some pleasures.



He is on the sand at the seaside, looking at and hearing the sound of the waves and warming himself in the sun.
These are pleasures.

Now he is taking a swim in the sea.



He is swimming through the waves. He is a good swimmer.

To a good swimmer, swimming is a pleasure.

Now he is resting in the sun again after his swim.



After the water the sun on his skin is a pleasure to him. Pleasure and pain are feelings.

The man is feeling the bit of wood with his fingers. Is it rough or is it smooth?



200

When we put our fingers on things we have feelings—feelings of touch or of heat and cold.

This is rough.

But this is another use of the word "feeling." This is smooth.

Things which give us pleasure have an attraction for us. But it is not the same sort of attraction as the attraction between the earth and the moon. (See pages 202-203.)

Our feeling of this attraction is named "desire."

When we have pleasure we have a desire for the pleasure to go on and go on ...

Time goes on. The hands of the clock go on. Our feelings may or may not go on.



Some desires are stronger than others. This baby sees the cat and he sees his ball.



The cat has an attraction for him.

He has a desire for the cat.

His ball has an attraction for him.

He has a desire for the

Which will he go to?

If his desire for the cat is stronger than his desire for the ball, he will go to the cat.



He went to the cat. His desire for the cat was stronger. All our desires are for things which seem good to us. They may not be good. Our ideas of them may be wrong. We get knowledge by putting questions. That is one way of getting knowledge. The answers may give us knowledge or they may not. When the answers are right, they give us knowledge.
When they are wrong

When they are wrong they do not give us knowledge.

2+2=4 Right

2+2=5 Wrong

How far is the sun from the earth? Which is the right answer: "It is two miles away." or "It is much more than two miles away"? Which is the wrong answer to the question? Which is his right hand?



Which is his left hand? He is facing you.

Now he has his back to you.

Which is his left hand now, and which is his right?

Our senses—seeing, hearing, touching, tasting, and smelling are ways through which we get knowledge. Our ideas come to us through our senses. This is a doorway.



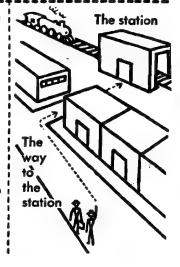
The way into the room is through the door. The way out of the room is through the door.

"Which is the way to the station?"

"Take the first street to the right."



This man had no knowledge of the way to the station.
Now he has the knowledge.



We get knowledge in different ways-through our senses.

through talk with other men.



through the work we do with our hands and our heads, and through books.



These are all ways of getting knowledge.

Knowledge is very important. It is important in itself. And it is important as a way to other things. A man who has no knowledge is of no use to other men.

is the word "use" part of your knowledge of English? (See page 219.) Knowledge gives us light. It makes things clearer to us.

This is a boy.



Every night he has a long sleep in his bed.



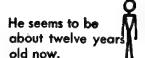
He will be a man.



He was a baby.



He goes to bed at eight every night.





0

He gets up every morning at seven.



He puts his clothing on.



He gets out of bed and gives himself a good wash.



He says "Good morning" to his mother and father and takes his place at the table.

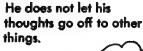


At school he sees his friends and does his work.



He keeps his thoughts on

He keeps his thoughts or his work.



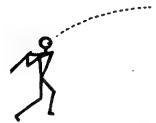




At play after school he sends the ball a long way.

Then he comes back from school.

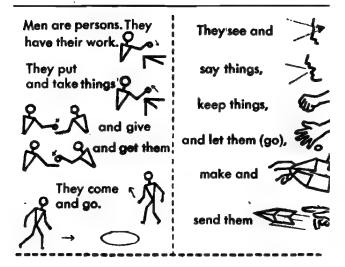




He makes it go a long way.

Here he is with the family again.





Some seem happier than others.
All these sorts of things are done by men and women.
Things are put and taken by them.
Things are given and got by them.
Things are seen and said by them.
Things are kept and let go by them.
Things are made and sent by them.

Eve saw the apple.





She took it



She gave it to Adam. Eve did these things.



The apple was seen by her. It was taken by her.

It was given by her to Adam,

These things were done by Eve.

We may say this in two ways.

She saw the apple and took it and gave it to Adam.

This may be said in two ways.

The apple was seen by Eve, and taken and given by her to Adam. I will do it.
I am doing it.
I did it.
They will see it.
They are taking it.
They gave it.
DO TAKE
SEE GIVE

It will be done by me.
It is being done by me.
It was done by me.
It will be seen by them.
It is being taken by them.
It was given by them.
DONE TAKEN
SEEN GIVEN

I will say it.
I said it.
I made it.
I kept it.
I let it go.
I put it there.
I got it.
I sent it.
SAY MAKE KEEP
LET PUT
GET SEND

It will be said by me.
It was said by me.
It was made by me.
It was kept by me.
It was let go by me.
It was put there by me.
It was got by me.
It was sent by me.
SAID MADE KEPT
LET PUT
GOT SENT

Every statement or question in this book has one or more of these sixteen words in it:

be	come	give	make
have	go	get	send
do	put	keep	see
seem	take	let	say

The first of these words, BE, comes into more statements than any other. Here it is. It goes like this:

	Past	Present	Future
1	was	am	will be
He She If	was	is	will be
We You They	were	are	will be

Here are the other fifteen words. They go like this:

	Past	Present	Future
1	í had	have	will have
	did	do	will do
1	seemed	seem	will seem
	came	come	will come
	went	go	will go
	put	put	will put
We	took	take	will take
-	gave	give	will give
	got	get	will get
You	kept	keep	will keep
. • •	let	let [']	will let
They	made	make	will make
	sent	send	will send
	saw	see	will see
	said	say	will say

	Past	Present	F utur●
	had	has	will have
	did	does	will do
	seemed	seems	will seem
	came	comes	will come
He	went	goes	will go
	put	puts	will put
	took	takes	will take
She	gave	gives	will give
	got	gets	will get
	kept	keeps	will keep
lt .	let	lets	will let
	made	makes	will make
	sent	sends	will send
	saw	sees	will see
	said	says	will say

In English we do not make statements like this:

She gave you money to t.

That is wrong.

We make statements like this:

She gave your money to me. That is right.

1	my	me	we	our	US
you	your	you	you	your	you
he she	his her	him } her }	they	their	them
lt .	its	lt J			2110111

In English we make COMPARISONS like this:

good	better	best
bad	worse	worst
much	more	most
little	less	least
beautiful	more beautiful	most beautiful
smali	smaller	smallest .
bright	brighter	brightest
short	shorter	shortest
thin	thinner	thinnest

In English we make changes in names like this:

```
1 cat (dog, boot, day, nose, face...)
2 glasse (watch, brush...)
2 glasses (watches, brushes...)
3 body (cry, baby...)
4 knife (leaf, shelf...)
5 tooth, foot
6 man, woman
7 ar more cats (dogs, boots, days, noses, faces...)
2 glasses (watches, brushes....)
2 bodies (cries, babies...)
2 knives (leaves, shelves...)
2 teeth, feet
2 men, women
```

1 or more sheep, scissors, trousers

КНИГА 2 BOOK 2

PREFACE

This is a second book in a series English Through Pictures. It keeps in mind that its readers will have many different needs. Some will want more English to help them to find work, some as a step on the way to higher education, some for business, travel or better living — and some because English opens for them a window with a wider outlook on the world.

We have tried in designing English Through Pictures, Book 2 to serve all this needs. However, our first care has been the ordering of the teaching itself.

It is the purpose of this book to supply starting points from which people can go out in different directions as their different interests take them. We hope it will be a book of beginnings.

"I am here."



Where is "here"? Where are you? Where do you live? Who are you? What is your name?

lives the place where you are living or have your house is where you live.

FUTURE will live

PRESENT

PAST lived

"I am here"



is the first statement in English Through Pictures, Book 1 (EP 1).

That book uses about five hundred words of English in a great number of different ways.

Using those same words, together with about the same number of new words and more pictures, this book (EP 2) goes farther into the language.



This new book uses about a thousand words of English.

use: when you make use of something you use it.

language: all the words used by persons talking or writing to one onather.

Are you a man or a woman or a girl or a boy? What is your country? Is the country where you live now the country of your birth?



Do you see on this page a map of the country where you live? Is it Germany, the Philippines, Brazil, Australia, Kenya, or some other country?

There are millions of readers of EP 1. The book is used in almost every country.

country: land under one government. birth: coming into being

almosts the shorter line here is almost as long as the other.

"almost every country": most countries.

"What is your name?" the man on the right asks. The other man answers: "My name is Jean Schmidt."

"Where do you come from? What is the country of your birth? Where were you born?" (These are different ways of asking the same question.)



"Geneva, Switzerland," answers Jean Schmidt.

"Have you any relations in this country?"

"Yes, I have one. My uncle, my father's brother, lives in Boston, Massachusetts, U.S.A."

asks: puts a question.

borns given birth or given being.

carrys one or more, some. In answering the question "Have you cary money?" we say "Yes, I have some" (not "Yes, I have any"). If we have no money, we say "No, I haven't any."

relation: person of same family, uncles father's or mother's brother.

will ask will answer ask(s) answer(s)

asked answered "When were you born? Give me the date of your birth. What is your age?" JANUARY 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 3

"I was born on January 10, 1920. I am thirty-seven (years old)."

"When were you at school? How long were you there? How many years were you at school?"

"I was at school eight years."



"What work do you do? What is your occupation?"

"I am a cook."

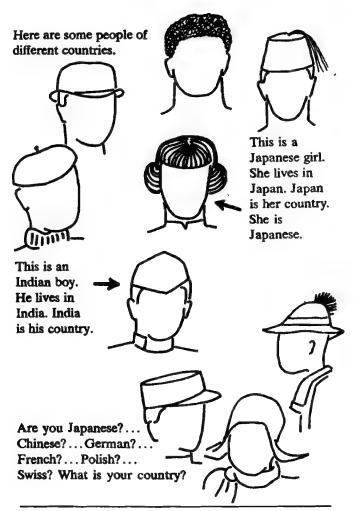


date: day of the month and year, If you give the day, month and year of your birth, that is a way of giving your age, saying how old you are.

age: your age is the number of years you have lived. how manys what number of, manys a great number of.

occupation: work.

cook: person who makes food ready by heating



people: men and women and boys and girls are people.

Here are some people who live in the United States of America, the U.S.A. The fathers and mothers of these people went to the U.S.A. from England, France, Italy, Switzerland, Poland, Russia and other countries. Some of them sailed there in sailing ships before the days of steamships.



Now the sons and daughters live in the U.S.A. and most of them are Americans. Some of them were born in the U.S.A. They got their start in America, but they have many relations in the old country.

sall: sailing ships have sails and sail by using the push of the wind.

starts if a person goes for a walk, the start of his walk is the very first step. Being born is the stort or starting point of a person, and his age at a given date is

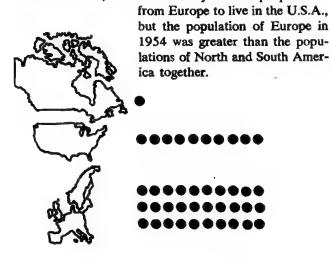
will sail



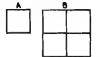
person, and his age at a given date is the time he has been living from the stort (from his birth).

sqli(s) sqlied

Japan and India and China are parts of Asia. Germany, Italy and France are in Europe. In all these countries there are many people. In some countries there is very little land for the size of the population. Europe has less land than Canada and not much more than the U.S.A., but it has a population more than thirty times as great as Canada's. And the numbers keep going up. Between 1850 and 1950, more than thirty million people went



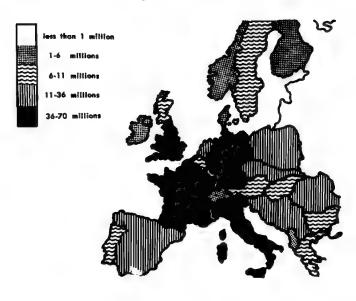
times as great: in this picture B is four times the size of A. It is four times as great as A.



populations the population of a place is the number of people living in it.

There are 50,000,000 more people in Europe today than there were twenty-five years ago. The increase in population in twenty-five years is 50,000,000. Europe has increased her population by 50,000,000 in the last twenty-five years.

This map gives a picture of the number of people in each country of Europe today.

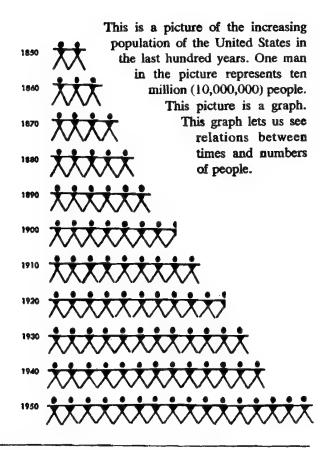


ago: before now, before the present.
Increase: amount by which something gets greater.
to increase: to get greater in size.
egaht every; all, one by one.

will increase

increase(s)

increased



represents: takes the place of; puts before the mind, graph: picture which represents changes in amounts in relation to other changes.

relation: there is the some relation between 2 and 4 as there is between 3 and 6.

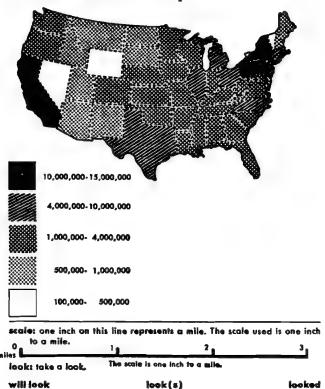
will represent

represent(s)

represented

This map gives a picture of the population in the different states of the United States of America today. The scale of the map is the same as that used for Europe on page 9.

If you look at the two you will see that the U.S.A. is not much smaller than all of Europe.



Which are the countries with the most people in them? China, India, the U.S.S.R. and the U.S.A. all have populations of over a hundred million. Some countries have less room in them than these four, but these have the greatest populations.



China has more than 600,000,000

India has more than 300,000,000

U.S.S.R. has more than 200,000,000

U.S.A. has more than 150,000,000

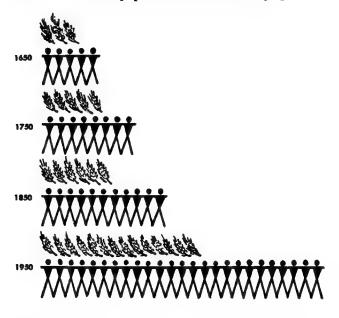
It is not good for a country if it does not have enough room for all its people. A person who does not have enough room to live in may not be able to keep well.

over: more than,

room: when there is no more room in a room, in a building, in a cauntry, it is full.

well: a person is well if there is nothing wrong with his body or his mind.

The population of the earth has increased more than the amount of food. There is a great need for more food. More than a billion people on the earth today need more food than they can get. They cannot get enough food to keep them well and strong. The relation between amount of food and size of population has been changing.



a billion: in American numbers, a thousand million, 1,000,000,000.

need: something important which is not present.

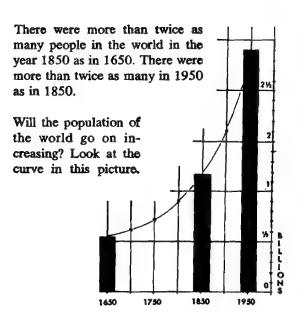
can: are able to.

cannot: are not able to.

will need (will be able to)

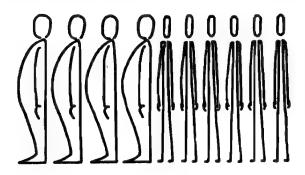
need(s)

needed



twice: twice a thing is two times it,
world: the earth and all that (which) is on it—people, other living things
and the things that man has made.
curves line that goes on changing its direction.

There were over two billion six hundred million (2,600,000,000) people in the world in 1954. Less than half of them could get as much food as they needed. Many of them because of this are not healthy.



There are some people everywhere who take more food than is good for them, but many more get less than they need.

People are asking one another what the world population will be in 2050 if it goes on increasing like this. It will be very great. It will be much greater in some parts of the world than in others.

Some people say it will be between five and ten billion and some that it may be as much as thirty billion.

More than a hundred million people on earth today live in cities. Some cities have more people in them than some countries have.

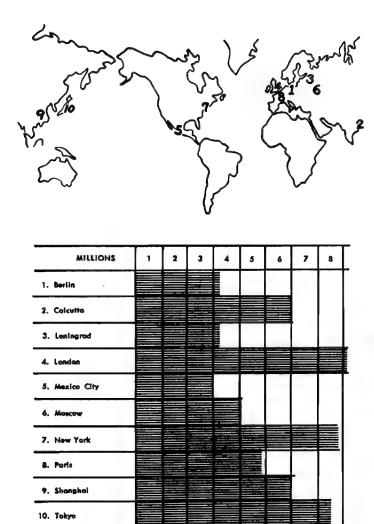
There are nineteen or more cities in the world which have over two million people in them.

Cities have been increasing in size in our time. Before the twentieth century it was hard for the people in a great city to get enough food.

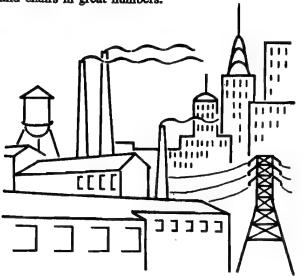
On the next page you will see a map of the world on which are marked ten cities with more than three million people in each.



city: town of great size. twentieth century: the hundred years numbered from 1900 through 1900



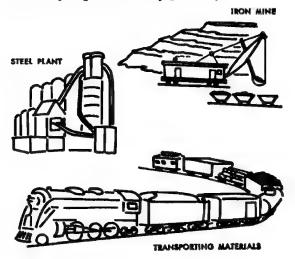
This city has great buildings, some of which have machines in them for doing many sorts of work by steam or electric power. These are factories. One of them is a factory where furniture is made. In it men make tables and chairs in great numbers.



machine: Instrument which does work for men.
power: a thing's power is the work it is able to do.
electric power: power which gives us electric light, heat, telephones.
factory: building where men and machines make things.
furniture: beds, lables, chests of drawers,
bookshelves, etc.

chairs seat for one person.

We are living at a time when machines do work which men used to do. Now materials and things of all sorts can be transported long distances quickly. Its transport lines are very important to any great city.



Materials such as iron, which is mined from the earth in some places, and steel, which is made from iron, are used to make machines. Iron and steel are metals.

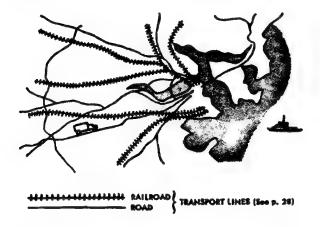
materials that from which things can be made. Wood is a material from which much of our furniture is made. Glass is the material used in windows. Much of our clothing is made of wool or cotton or silk materials. Machines are made of metal.

any: in this sense, every.

plant: in this sense, factory.

metal: any material of a certain sort, such as Iron and steel. Metals are hard and are got from the earth.

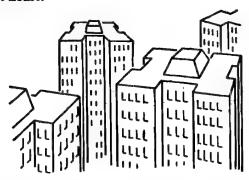
It is only in the last century that great numbers of people have been able to live far from their food supply, with thousands of men in one place doing the same sort of work.



High buildings like those pictured on the next page are being put up in more and more great cities today in greater and greater numbers. They are apartment houses, which sometimes have hundreds of different families living under one roof. There may be as many as twenty or thirty floors in one apartment house, with homes for fifteen or twenty families on a floor.

supply: amount of something for future use.
food supply: amount of food needed.
apartment house: building for a number of families to live in.
homes living place for a family.

Hundreds of families may make their homes in one apartment house.



In these stores people who live in the city can buy food, clothing and supplies of everything they need.



Some stores sell food, some sell clothing and some sell furniture. In most cities there are great stores which sell almost everything. They supply these families with what they need.

buys get something by giving money for it.
sells supply for money. If I buy something from you, you sell it to me.
supply: give a supply of.

will buy will sell will supply buy(s)
seli(s)
supply(les)

tagued sold supplied

People in apartment houses have no place to keep a supply of food. They may have enough food in an icebox to take them through a day or two,





but on most days they buy meat and milk and fruit and other things they need from a store near their home.

Many families have supplies of milk and other foods sent to their houses every day. People with children in the family may buy four or five quarts of milk at a time.

Here is a family with five persons in it: a husband, a wife and their three children.

The man is the woman's husband and she is his wife. They have been married ten years.





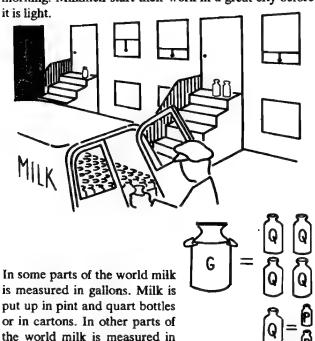


childs a baby or a young bay or young girl. Young bays and girls ore children.

quart: see next page.

married; husbands and wives are men and women who are married.

A milkman puts the milk outside their door in the early morning. Milkmen start their work in a great city before it is light



pint: about two cupfuls.

than a quart.

liters. A liter is a little more

gallon: four quarts make one gallon; two pints make one quart; there are two cups in a pint.

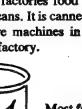
early: the first hours of the morning are the early morning.

will start

start(s)

started

In some factories food is put into cans. It is canned. These are machines in a canning factory.





Most foods today of Food stores sell of fruit and vegetables

Most foods today can be bought in cans. Food stores sell canned soups, meats, fruit and vegetables.

Food is canned to keep it from the air. When air can get at it, it quickly goes bad—if it is not kept very cold.

Canned food that has gone bad is a poison. Bad food is very bad for people; it poisons them. If they take much of it they may die. After a person dies, he is dead.

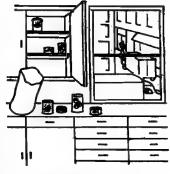
can: metal box. A can can keep food good for years, In Britain a can is a tin. Tin is a metal which is used as a coating for cans.

vegetables: plants used as food.

poisons anything which is very bad in its effect if taken by mouth.

die: come to the end of living. dead: no longer living.

will poison will die poison(s) die(s) poisoned befo People can have only a few cans of meat and fruit and other things "on hand," as we say, on their shelves. They may have a cupboard with two or three shelves of canned food, but most people have no room for more than that. If supplies do not come into the city day by



day their supply of canned food is quickly used up.

can'ts cannot.

few: a small number of, not many.

cupboards walled-in shelves with doors in front of them.

Some people working in cities have no time or place to cook for themselves. Many of them go out to restaurants for all of their meals. There are many restaurants in a great city, all needing supplies of food every day and some of them cooking for great numbers of people.



A good restaurant keeps its food clean and does not let flies get at it. If flies get on food they may poison it.

cooks do cooking. A cook cooks.

themselves: himself and herself.

meal: food taken at one time, in the morning (breakfast), in the middle of the day (luncheon, lunch or dinner) or at night (dinner or supper). restaurant: place where you can take meals at different prices.

flyz this is a housefly.

- TO

cooked

will cook

Here is a supply of meat, vegetables, milk, butter, cheese, bread, fruit and eggs, enough for a family of four persons for one day in the U.S.A. If a person does not get enough food of the right sorts, he will not keep well. He will not be able to work or play well.



Fresh food must be supplied to a city day by day. It will not keep good very long if it is open to the air. If uncovered, it may get flies on it. Flies get on dirty things. Their dirty feet make food dirty. Canned food will keep good for a long time. It can be stored.

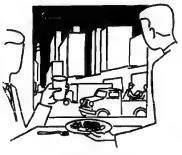
fresh: new, not kept for a long time.

must: has to. A man must have air, water and food to live.

uncavered: not covered.

stored: kept for use when needed.

will store will work will play store(s) work(s) play(s) stored worked played Grain and meat and milk and fruit and vegetables must be transported into the cities of the world day and night all through the year to feed its city populations. Much of this food comes great distances in ships, trains, or trucks, and must be kept cold and clean all the way.



This is a bag of grain.



grains seeds of some grass plants used for making bread and some other cooked foods,

feed: when we give people food, we feed them.

trucks road transport for goods.



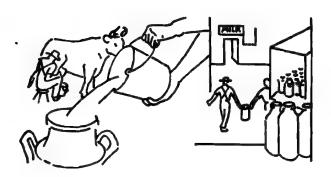
will food

food(s)

fed

The milk must be kept

clean and cold and put into bottles and taken to the stores and houses in the city. City governments see that milk is kept clean and has enough butterfat in it.



Some city-born children have never seen a cow and have to be taught where milk comes from.

eway: off, from that place

full the part of milk from which butter is made is butterfat. There are many sorts of fats.

movers not ever.

will teach

teach (es)

مطمسمه

Milk is the best food there is for babies. It is good for children and for older people too. It has in it fat, which gives energy, and it has the most important of the materials needed for building up our bodies. Milk makes strong bones and strong teeth too. It is good for a child to drink two or three glasses of it every day.



In addition, milk has in it most of the vitamins which are needed to keep us healthy. Vitamins are a discovery of this century. A hundred years ago no one knew anything about them.

too: In addition. After the addition of one thing to another we have the one and the other too,

energy: power,

builds putting up a building is building it. We can build houses with wood and bodies with food,

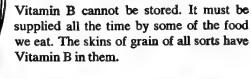
drinks take in by mouth, take a drink.

knows have knowledge of.

will build build (a) built will drink drink (s) drank, drunk will know know(s) know, known

The vitamins are named by letters of the alphabet. Vitamin A is needed by the eyes. There is Vitamin A in milk, butter and green vegetables. It can be stored by the body.







alphabet: all the letters used in writing (see page 61), eat: take food by the mouth.

will eat

eat(s)

ate, eaten



Vitamin C is very important to the body. Without it men's teeth become loose and their arms and legs weak. Lemons, oranges and tomatoes have Vitamin C in them.

Vitamin D is the sun vitamin. We get it in milk and eggs and from sunlight on our skin. There are other vitamins, but these, A, B, C and D, are the most important.



without: not having. becomes come to be.

looses not strongly rooted; not supported or kept in place.

weaks opposite of strong,

lemon: yellow fruit like an orange but not sweet. tomatos a red or yellow fruit used as a vegetable.

become

become(s)

became

Every person must have air and water and food to keep him alive and he must have these vitamins to keep him well.

How do we know this? How do we know what food keeps a man well and healthy? We know from the effects on menand animals of going without one sort of food or another. That is how we see which foods give us energy, which make us fat and which make us able to keep healthy.



Men of science are putting together more and more knowledge about the sorts and amounts of food that our bodies need. Too little food or too much of the wrong food is bad for a person. The right amount of the right food (the food best for him) will keep him feeling well and strong.

Some people need a little more or a little less of one or another sort of food than others.

alives living.
going withouts not getting.
too littles less than enough, not enough,
too much: overmuch, more than enough.

Where do we get our food? We get much of it from the earth. We use some sorts of animals and birds to give us food.

Great parts of the earth are covered with grass, a plant which grows with narrow green leaves and puts down roots quickly. There are more than three thousand different sorts of grasses growing.

Grass has very small seeds which are used as food by birds and small animals. Man has discovered how to grow grasses with larger seeds.



Wheat, rice, corn, and other grains come from grass. The grain lands of the world have been planted by men. From grain man gets an important part of the food that gives him energy.

discovers make the discovery of, get to know. larges great in size (large, larger, largest). grows come up from seeds in the earth, get larger.

will discover will grow

discover(\$) grow(\$)

discovered grew, grown



The grasslands of the earth supply food to many different animals. From some of them we get meat and milk. From milk we make butter and cheese and other foods.

From birds living on grain we get eggs and meat.





Seeds planted in good earth supply grains and fruits and vegetables of many sorts,

The seas and rivers supply fish and some sea plants for food.



Man had to go from place to place for food until he discovered how to grow grain. Uncooked meat and parts of plants were all he had to eat until he made use of fire. And he had to get new supplies of food every day.

He hadn't any way of keeping it good.

How could he get enough good food for himself, his wife and his children without having to go looking for it every day?

When he started growing grain, he had time to do other things than get the family food day by day. He could keep a supply of grain on hand through the winter until the next spring. He could make a

mals for his use.



home for himself and keep ani-

Bread, which is made from flour, supplies us with energy and is the chief food of many people.

A small amount of seed planted in the earth can grow great amounts of good grain.



In eastern countries more rice is eaten

than wheat.



flour: a soft powder made from crushing wheat or other grain.

pound: measure of weight. One pound (1 lb.) is a little less than half a kilogram. One kilogram (1000 grams) is a little more than two pounds (2.2046 lbs.).

public use: use by anyone. The public are the people.

eastern: in or of the east (ern may be put on the end of north, south or west in the same way).

If there were enough good food in every country every day for every person, would the world be a better place than it is?

We say, "If there were enough food," not, "If there is enough food," because there is not enough, and we know it.

We say, "If there were something in this hand you would see it," because we know that there is nothing in the hand.



But with this hand, which is shut, we say, "If there is something in this hand you will see it."



Now the hand is open. There is something in it and you do see it.



If we asked the question, "If there were enough good food for everybody, would the world be a better place?" some men would answer: "Yes, the world would be a better place." Others would say, "No, nobody would do any work! The world would be a worse place."

And some others would say something like this: "That is a strange question to ask when half the people of the world today do not get enough food. There will be time to answer your question when we have grown enough food for everybody."

What would your answer be?

everybody: all persons, everyone.
nobody: no person, no one, not anyone.

But the line is not straight. That is why we say were and would in this example.

would: if this line from A to B were straight, then it would be the shortest distance between A and B.

Why do men work?

Do they work only for their private needs — because of their need for homes and food and clothing for themselves and their families?



Why do some men work when they have enough of all these things? Do they work for pleasure, because making things, for example, gives them pleasure? Do some men work for the public good? Why are some men happier when they are working? Isn't work one of their needs?

Why do you work? Do you need to work to be happy?

Do we know one another's needs? Aren't we in the dark about some of them?

private needs: needs of one person or of a small number, public good: good of oil, inn'ts is not.

aren'ts are not. When isn't or aren't starts a question in place of is or are, we are looking for the answer "Yes."

in the daria people area's able to see in the dark.

If all the people alive on the earth today were hand in hand like this, the line they would make would go more than fifty times round the earth.



The line of people would go out to the moon and back three times. It would be long enough to do that.



But there isn't a line of people which goes out to the moon and back.



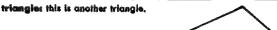
And the people of the earth aren't hand in hand; far from it!

That is why we said "were" (not "are") and "They would go" (not "they go").

We say: If the angles in this triangle are equal, then the sides will be equal.



But we say: If the angles in this triangle were equal, the sides would be equal.



Men are not hand in hand, but their minds today are being put increasingly into touch with one another through reading and writing and in many other ways.

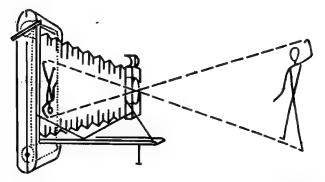
We are in touch with other people everywhere through pictures of them. Newspapers give us photographs of almost everything. The faces of important people can be seen by the public everywhere.

Before 1800 nobody could take photographs. Nobody had had the idea of using the knowledge of how light is bent by glass to

make pictures.



Here is a camera which is taking a picture of a man.



You will see that the picture inside the camera is upside down.

Increasingly: more and more.

photograph: picture taken with a camera,
camera: instrument for taking photographs.

Another way in which people are getting to know more about one another is through the radio. Man's words were first sent from one place to another by telephone less than a hundred years ago. A word can now go by telephone from the Atlantic to the Pacific in one-twelfth (1/12) of a second. A telephone needs wires, but the





radio, which came into use less than fifty years ago, can send sounds any distance without wires.

Television, which is one of the great new powers—for good or bad—of this century, lets a public man talk to

millions while they sit in their private homes seeing him as if he were there in front of them.



wire: thread of metal.

talk: soy things.

sit: be sected. When you take a sect on something, you sit on it. telephone, radio, televisions see pictures on this page.

will talk will sit talk(s) sit(s) talked

But people can't know what any man is saying if they don't know his language.

Up to a hundred years ago few people needed to learn foreign languages because not many people went into foreign countries.

Now, the need to learn other people's languages is becoming greater every day.



learn: get knowledge of; be learning.

foreign language: a language different from the language of your family.

foreign country: a country which is not yours.

will learn

learn (s)

learned, learnt

Today millions of people, young and old, go into foreign countries every year on business or for pleasure.



That is a quicker way to get about than on one's mother's back. Here is a woman who is carrying her baby on her back. She carries the child with her wherever she goes. In the last hundred years men have learnt to go over land and sea through the air as almost all birds and many insects can. Men are carried through the air in airplanes.



one: a person.
one's: a person's.
corrying: taking from place to place.

Impacts these are insects.

will carry

coming.



Some birds have eyes which can see great distances, and they have good hearing. Some of them can hear sounds which we cannot hear.



But man has made himself new ears and new eyes.





Today he can talk with a person at the other side of the earth by telephone. Through the radio he can hear sounds which come to him through space from thousands of miles away.



He can see through a telescope the mountains on the moon, and, through a microscope, thousands of living things in a drop of water.

hears take in sounds, use the sense of hearing.

spaces distance between things; that in which all things are.

will bear

hear(s)

hand

Hundreds of millions of people today can hear on the radio important statements by public men, statements which in earlier times could have been heard by few. It is a question whether at any time in history a man has been able to make his voice heard by as many as a hundred thousand people at the same time. Without the telephone and the radio a man can be heard only as far as his voice can carry.





New instruments are making men's homes less private and public men more public.

whether: If or not,

history: man's past as we know it; the account or story of it.
voices sound made through the mouth; the power to make such sounds.

Birds and many insects have wings. It is their wings which take them up into the air. The wings of birds have long feathers on them. Their bones and the stems of their wing feathers are hollow. This keeps them light.

Here is a bee.



Here is a beetle.



Here is a fly.



And here is a butterfly.



Bees, beetles and flies are insects.



There are very many different sorts of insects.

wings a bird has wings where a man has arms and a dog or horse has front legs.

feathers: these are feathers:



hollows with space inside as in a pipe or in a ball which is not solid.

lights of little weight.

Men have been attempting for thousands of years to make wings that will let them fly like the birds.





Here is the picture of the first flying machine to take men into the sky, made in 1903. It did not fly very fast or very far.

Now planes can fly farther and faster than the fastest bird and can carry heavy weights through the air. Man can go faster than sound in the newest planes.



heavy: of great weight; opposite of light, fast (faster, fastest): quickly, fly: go like a fly through the air.

will fly

fly(les)

flew, flows

We can see why distances between people are not as important now as they were. They may be bridged in so many ways.

What is a bridge? Here is a wide river with a bridge over it. The bridge is more than a mile long and is made of steel. It can carry very heavy weights. It is so strong that not only automobiles but trains go across it. It is so high that great ships go under it.



Language is a bridge between minds, a bridge so strong that trains of thought can go across. Language can bridge distances.

so: in this sense very, so strong that: strong enough to let, so high that: high enough to let.

will bridge

bridge(s)

bridged

Language can bridge time as well as space. Ideas can go from mind to mind across the language bridge, and they can come from the past to the present. We can read what men before us wrote and keep their books for others to read in the future,

Here are some of the great books of all time.



Books are the most important records we have of men's thoughts and feelings, their ideas and desires.

read: do reading.

write: do writing, past: what has been before now

present: here and now.

future: what will be.

record: store of knowledge. From records men can learn what was done in earlier times.

will read will write read(s) write(s) read wrote, written All men have more in common with all other men on earth than most of them know. What do the words "in common" mean? What is their meaning? What do the people in this family have in common? They have



their family name in common. They are the Smiths, or the Wangs. They have a house in common; it is their home. The husband and wife have their children in common. In some parts of the world a man may have a number of wives. In other parts a woman may have a number of husbands. In these countries the wives have their husband in common or the

husbands have their wife in common.

People of the same country have that country in common. It is their country. Every country has a flag. What is the flag of your country?

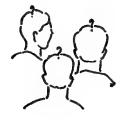


meaning: sense. What words say to us is their meaning, what they mean.
flag: see picture on this page, Your flag represents your country.

People who talk the same language have that language in common. It is their language, the language of each and all of them. They have the ideas and feelings about things which that language carries.



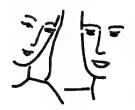
People who do not talk a language do not know what those who use it are saying. They do not know what its words can mean. They have less in common with those who talk it than those people have with one another.



Sometimes, as in India, in one country under one flag people talk many languages. They have their country and their flag in common, but some of them have to learn the language of others if they are to have a language in common.

12 Заказ 1633 337

Talking with someone is saying things to him, hearing what he says and taking in his meaning. People can



talk together only when they have a language in common. When you were very young your parents talked to you and after a time you saw what they meant and learned to talk to them. A baby's first words are commonly names for its parents. Some children learn to talk earlier than others.



We go on learning our language all our lives.

Some people talk more than they think, and some people

3,32

think more than they talk. Most of our thinking is done through language.

parent: father or mother.

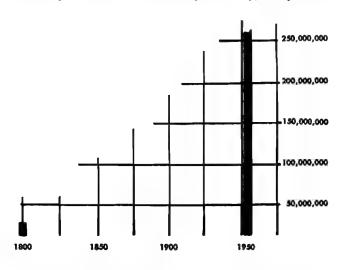
thinks have thoughts, use the mind, have ideas.

will think

commonly: most times. It is common for babies to say names for their porents first. Babies have this in common.

There are more than 2600 million people on the earth and about 2500 languages. Of these languages only about twelve are used by more than 50 million people.

Here are the names of some languages which have very wide use: Chinese (Mandarin and Cantonese), English, French, German, Hindi, Japanese, Russian and Spanish. All these languages have more people talking them today than ever before. A hundred and fifty years ago there were only about twenty million people who talked English, for example. Now there are at least two hundred and fifty million, and there may be many, many more.



at leasts that number or more, as

More people will learn more languages as better ways of teaching them are worked out.

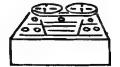


This book, English Through Pictures 2, is itself part of an attempt to teach English better.

We need better books to learn from and better records of good voices to teach us how to listen to the sentences of a language and say them.



Recordings of sounds are made on disks and on tapes.



listen: attempt to hear.

attempt: make an attempt.

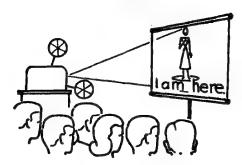
records records, when played on a machine, let us hear again the sounds recorded on them.

Seminance a thought put in words. A written sentence starts with a large (capital) letter and ends with o full stop (period) or sometimes a question mark.

disk: sound recording played with a needle.

tapes long narrow roll of thin cloth, paper or other material.

will listen will attempt listen(s) attempt(s) listened attempted We need good pictures to teach us meanings in the new language and good motion pictures to help many more people to learn languages quickly and well. The learners will then be able to work in groups with the help of teachers or by themselves, using books, records, radio, sound motion pictures and television.



A teacher can help a learner to learn. Reading and writing can help us to think.

well: in a good way.

belps something which does part of our work for us. A stick may be a help to an old man; it may help him.

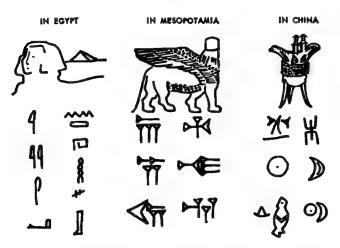
in groups: together with others, JJ) groups those doing something together or having something in common

will help

help(s)

Inclined

Writing is a very much newer invention than talking. Nobody knows when men first began to talk, but they did not begin to write, so far as we know, until seven or eight thousand years ago.



In Egypt, Mesopotamia, and China, and later in Palestine and Greece, men began to make marks and pictures with sticks and sharp stones from which others, or they themselves, later, could see what they had thought.

Invention: some new thing or a new way of doing something worked out by men.

begans started.

sharp: cutting.

stone: a hard material, or a bit of it. Much of the earth is made of stone.

Some stones are round and smooth from being rolled about by water.

Others are sharp and early men made them into knives.

later (late, later, latest): opposite of earlier (early, earliest).

will begin

begin(s)

began, begun

These early records were the beginning of writing. The first writing was picture writing. Here are some early Chinese picture words. Can you see what they represent?



Later Chinese writing is less like pictures than the earlier writing was but we can see the pictures in some of its words. For example:



Here are some Egyptian words in picture writing.



beginnings starting point.

In picture writing, each picture represents a word; you need a different picture or mark for each word.

In present-day Chinese writing most of the marks are not pictures of anything, and a reader has to learn how the Chinese write about two thousand of these words before he can read a newspaper.

With some of these marks you may be able to see what the idea is. For example:

The sun and moon.



Two of its meanings are: "bright" and "open."

A man and two marks.



One of the meanings is "what men have in common."

Learning to read Chinese is much harder than learning to read English. But in word-writing like Chinese the same marks can be read as having the same meaning in different languages; for example, in Mandarin, in Cantonese and in Japanese. In time some men discovered how to represent the sounds in words by marks. In any language there are only a small number of different sounds. By writing down marks to represent sounds, not ideas, men can spell any of the words in a language with only a small number of marks. Every written language today has its spelling system. The hardest languages to spell are those in which—as with English—many of the letters may represent more than one sound.

Here is the complete Roman alphabet in which English and many other languages are written.

ABCDEFGHI JKLMNOPQR STUVWXYZ

Something written in English has a meaning only if it is read as English, because the letters in English represent English sounds. What is written in Italian must be read as Italian.

spells put letters together to make words.

complete: something is complete when all of it is there.

systems: way parts are put together. Here letters are put together to represent the sounds of a language.

Here is the name of the book English Through Pictures written in a number of different languages. The names of the languages are given in English.

الإنكليرية بواسطة الصور Arabic ছবির ভেডর দিয়ে ইংরাজী শেখা Bengali စွစ်ပုံမြင့် အင်္ဂလိပ် စါသင်နည်း Burmeso 英語圖解 Chinese Greek ΑΓΓΛΙΚΑ ΜΕ ΕΙΚΟΝΕΣ אנגליה כאמצעות תמונות Hebrew तस्वीरों द्वारा श्रंगरेज़ी Hindi Japanese 그림윤통하야 영어공부하는 방법 Korean اموحتن زمان انگلسی از روی عکس Persian Russian АНГЛИЙСКИЙ ЯЗЫК В КАРТИНКАХ Sinhalese පින්තුර මහින් මුංගීසි භාණව මුංගනගැනීම படங்களின் மூலமாக ஆங்கிலம் கற்றுக்கொள்ளல் Tamil ఫటములద్వారా ఇంగ్లేమ నేర్చుకొమట Telugu เรียนภาษาอังกฤษด้วยภาพ Thai تصاویر کے درجہ انگریزی سیکھئے ا Urdn

Here are the twenty-six letters used in English with the English names for them spelled out after them.

a	ay	j	jay	8	ess
b	bee	k	kay	t	tee
C	see	1	ell	u	you
đ	dee	m	emm	v	vee
e	ce	n	enn	W	double-U
f	eff	0	oh	x	eks
g	jee	р	pee	у	wy
h	aich	q	kyou	z	zee or
i	eye	r	are		zed (British)

Some of these letters are used not for one sound only, but for any of two or three or more different sounds. The letter a may have the sound of a in bag, part, again, say, was, any, or fall.

The letter e may have the sound of e in bell, week, older, earth, or hear, or it may have no sound but only an effect upon other sounds which come before it. The a and the g in bag have different sounds from the a and the g in age, for example.

Reading English is not as hard as reading Chinese, but it is harder than reading a language in which each letter has only one sound. The book, First Steps in Reading English, can be a great help to a beginner.

Are some of the sounds used in one language very unlike any of those used in another?

Yes. You may have felt in learning English that some of the sounds it uses are strange. But if you do not have a well-trained ear, you will not hear English words as they are heard by an Englishman or an American. You will hear the nearest sounds in your mother language.



A good way of learning to make the sounds of a new language is to use recordings which have spaces after each sentence giving you time to say what you have heard before the next sentence comes.

may have felt: may have had the feeling. trained: taught to do something well.

will feel will train feel(s) train(s)

1017 trained There are machines which will play back to you again and again, one after the other, the sounds you have made and the sounds you were attempting to make. When you hear what you are doing wrong you can try to do better next time.



For most children, new sounds are easy to make when they hear them, and children seem to hear new sounds better and more easily than grownups do. If a family goes to China, or France or Finland (to take three countries whose languages are very unlike one another) the children will learn to talk Chinese or French or Finnish much more quickly than their parents will.

try: make an attempt.

will try

easy: something is easy for you when you can quickly learn to do it well.
It is hard when you cannot.

grewnups person who is no longer a child; who has grown up into a man or a waman.

Why is this? Why is it easy for young children to learn languages?

Part of the answer is that children have so many needs. They need to be helped by grownups at every turn. They have to make their needs known and they are always watching the effect of what they say and trying new ways of getting what they want.



Children are learning new things all the time.

watching: looking at. Our watches are things we watch (keep looking at) to see the time.

always: at all times, all the time.

wants have a desire for.

will watch

want(s)
watch(es)

wanted watched Another part of the answer is that children are not, as older people sometimes are, fixed in their ways of living. When they are taken about from one country to another they change easily from one language to another, from one bed to another, from one food to another. Older people are more fixed in their ways. They have been hearing and talking one language for a long time. Their ways of hearing and making sounds and of putting words together are like the rails a train goes on. They have been up and down their lines of talk and thought too many times to change them easily.



A child is freer in his ways. He is more like an airplane or, better, like a bird; he is free to go in any direction he wants. He is free to hear sounds as they are and make them as he hears them. He is free to put new words together in new ways in talking a new language.

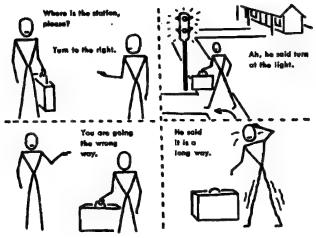
free: opposite of fixed.
change: make a change, make changes in.

will change

change (s)

channed

The more languages you hear and get to know, the more you will see how any language is made up of a small number of sounds put together in different ways. For example, in English, light and right are different words with only one sound in them different. The same is true of long and wrong.



If a learner does not hear these different sounds as different, he may not get the meaning of what is said to him.

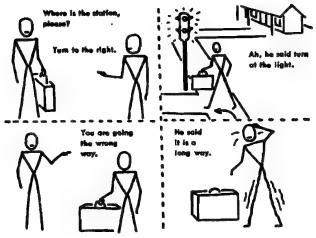
furnic make a turn. altr a cry not a word.

will term

turn(s) >

berned

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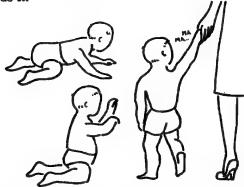
will term

turn(s) >

berned

There are many ways of helping a learner into a language, but not enough people know them.

Most people learn their mother language without being able to give any account at all of how it works. They learn to talk as they learn to walk, without any idea of how they do it.



People who learn to use a language well do so through talking with others who use it well, through reading good writers and through watching the effects on others of what they say and how they say it. The world needs more people who can use language well. Language is as necessary to men's minds as the air they breathe is to their bodies.

necessary to: needed by.

to breathe: take air in and give it out.

The sound of ea in breathe is like ea in meal.

The sound of ea in breath is like ea in head.

will walk will breathe walk(s)
breathe(s)

walked breathed All men need air; we breathe in air from outside our bodies in every breath.



When you put your face under water you cannot keep it there long.

A swimmer can't swim under water very long. He needs air.

A good swimmer may swim with his face in the water; if so, he keeps turning his head to take a breath through his mouth.



He does not take in air through his nose under the water because water would get in through his nose with the air and go to his lungs. With water in his lungs a man can't go on living.

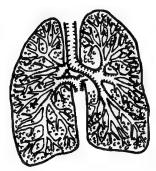
swim: be swimming. fung: see top of next page.

will swim

swim(s)

-

Here is a picture of a man's lungs. They are soft like sponges with thousands of little pipes going through them. The pipes keep branching like the branches of a tree so that they go through every part of each lung.



Our lungs are in the upper part of our chest. We have two of them. The air we breathe goes right in to every



part of the lungs through these branching pipes. They take it to the blood which is moving all the time through the lungs and round to every part of our bodies. The blood makes a journey round the body and back to the lungs in a very short time.

spenge: framework built up by one sort of water animal as its home; soft in water and used by men for washing.

upper: higher up than the middle, right in: all the way in. blood: red liquid in bodies of higher animals, moving: in motion,

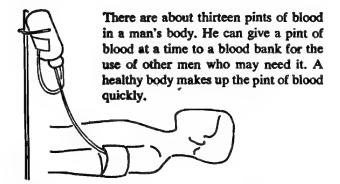


miove(s)



What is blood?

It is the red liquid which comes out of your finger when you cut it.



What does our blood do for us? It takes food to all parts of our bodies and takes waste away from them.

All the parts of our bodies are made up of cells. These cells, which are very small, all need food all the time.

cut: make a cut in.

blood bank: place where blood is kept as money is kept in a bank, wastes that which is of no more use; materials not needed.
cells smallest living thing, or smallest living part of living thing.

will cut

cut(s)

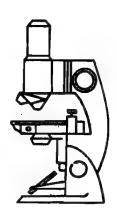
end

Here are some cells, thousands of times the size they are



Each different sort of cell has its own work to do, different from the work other sorts of cells do.

No one had seen cells before the invention of the microscope and its development in the sixteenth and seventeenth centuries. Before then no one could make pictures of cells because no one could see them.



owns a cell's own work is its work, not that of any other sort of cell.

Your own hat is yours, not any other person's hat.

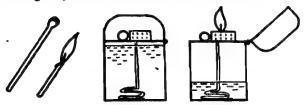
developments change by which something (living thing, idea, invention) becomes better, or more able to do things. All the animals and plants we see about us have developed from earlier living things which were at first made up of only one cell.

will develop

develop(s)

developed

Cells are like little flames. A flame needs food. We get a quick flame—for a fire or a cigarette—by lighting a match or using a lighter. The flame of the match burns the match and the flame of the lighter burns the liquid in the lighter, if there is air for them to burn in.



All fires burn something. What they burn is their fuel.



tigarettes thin roll of cut tobacco in paper for smoking,

cigarette lighter: box with liquid which will burn in it.

tobaccos dried leaves of the tobacco plant.

burst be changed by fire, match: small stick of wood or paper which gives flame.

fuel: material for fire. Fuel may be solid, liquid or gas-

will burn

burn(s)

burned, burnt

The blood is like a stream. The cells take what they need, their fuel, out of the blood stream, as plants and fishes take their food out of water.



The blood stream carries food and the oxygen which it has taken up in our lungs to all the cells in the body. Old cells die and give place to new cells in the body as plants and fish and other living things in the world about us die and give place to others. Three million of your red blood cells die every second and other cells take their place. The red cell population of your body changes completely in about three months.

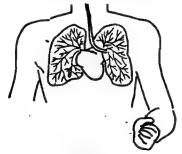
stream: river.

exygen: one of the gases in air. Our lungs take it out of the air we breathe. Fire takes oxygen out of the air as it burns.

What makes the blood go on moving round the body in a stream?

The heart sends it round.

The heart is between the lungs. A man's heart is the size of his shut hand.



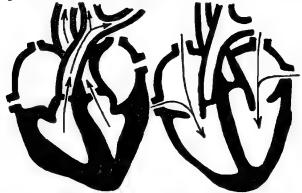
The heart is a pump. If you put your hand under water like this, and keep letting a little water into it



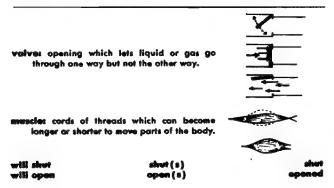
and sending it out again, you are pumping the water. The heart pumps blood in a way a little like this.

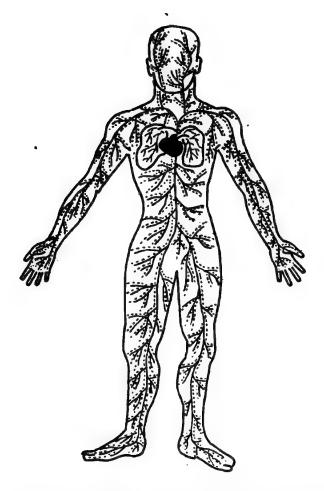
pump: machine for pushing liquid or air or gas in or out of something.
will pump pump (s)

The heart has four rooms in it with doors (valves) between them. It pumps blood in and out through these doors by changing the size of the rooms so that the doors open and shut. It can do this because it is made of muscle.



The heart keeps a stream of blood going all round the body and back again to itself. The pipes which take blood from the heart are named *arteries*; the pipes through which it comes back to the heart are named *veins*.





A solid line represents an artery and a broken line a vein.

The first man to discover that the blood goes to all parts of the body, out through the valves of the heart through one system of pipes and back again through another, was the seventeenth-century doctor William Harvey.



The journey of our blood all round the body is the circulation of the blood. As you see in the picture opposite, the branches of the arteries are like the branches of a tree which get smaller and smaller the farther they are from the roots. The small branches go to all parts of the body. They go to the ends of your fingers and toes, to all the muscles—those parts by which you move your arms and legs and head and other parts of the body.

doctors man with training which helps him to make and keep people healthy.

circulations motion round and round.

picture opposites picture which is on the opposite page; picture on the opposite page.

Everywhere the blood stream does two things: supplies the cells with food and oxygen and takes away waste. It is as if the blood kept the little fires in the cells burning and took away the ashes.

The fuel for the fires in the cells is given us by the food we eat. It cannot burn without oxygen. This gas is as necessary to all living things as it is necessary to the burning of fires made of wood or coal.



Burning is the change which takes place when oxygen and fuel unite. Coal, wood and other fuels (cooking gas, for example) burn by taking oxygen from the air.

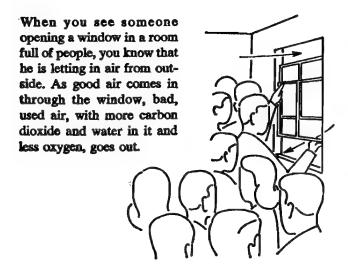
everywhere: in all places, in all parts, at all points.

will unite unite(s) united

ash: powder you can see in the place where a wood fire has been burning.

unite: become one new thing, in this sense of unite.

coast coal is mined from the earth. Trees living millions of years ago have been slowly changed into the hard, black coal in use as feel.

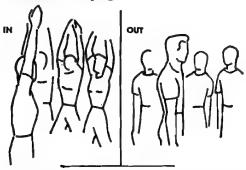


We say good air is fresh air. Fresh air is clean and good to breathe and has enough oxygen in it for our needs.

carbon diaxides are of the gases present in the air, it is made up of carbon (present in coal) and oxygen united.

fresh: here are same other senses: Fresh water is water which is not sait like sea water. Fresh bread is new bread. Fresh paint is paint which has been newly put on

These boys are outside in the fresh air, breathing deeply while their teacher is saying:



for every breath which they take. If you could watch them you would see their chests becoming first larger, then smaller in size, as their lungs breathed air in and out.

Breathing goes on when we are awake and when we are sleeping. Most of the time we are not conscious of our breathing.

The motion of our lungs as we breathe is automatic. It goes on by itself, the lungs taking fresh air in and letting used air out about eighteen times a minute. This is the common rate of breathing.

We become conscious of our breathing if anything shuts the air off from us, so that we do not get enough oxygen for our needs.

awakes not sleeping, conscious of steeling; having in mind, automatics working by itself, without anyone having to do anything about it consciously.

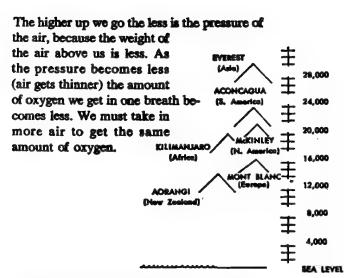
Keeping your mouth shut, take your nose between your thumb and one finger, so that you shut the air out and shut your breath in. How long can you hold your breath? You will be wise if you do not try to hold it more than a minute. If oxygen is kept from a person for long he will become unconscious.



When a person becomes unconscious through getting water or smoke in his lungs it is very important to start him breathing again. This is done by turning him face down (putting something between his teeth to keep his mouth open) and then working his lungs to start his breathing.

hold: keep from changing, keep in one place, keep from moving, wise: having knowledge and seeing what to do for the best, unconscious: not conscious, having no sense or feeling or knowledge.

will hold



The instrument we use to measure the pressure of the air is the barometer.

the pressure on something: the push on it. The cir is pushing on this ball, putting pressure on it, from all sides all the time. above: over, higher up. measures take the measure of. will measure mouture (s)

Men have been able (1953) to get to the top of the highest mountain in the world, Mount Everest. They had to

use oxygen when they got up high. They had to keep control over the amount of oxygen they used. They could get no more supplies from those below.



This man, who is going up a high mountain, is using a supply of oxygen which is stored in those cans he is carrying on his back. By opening and shutting a valve, he controls the amount of oxygen he breathes in. The gas has been pumped into the small space inside the cans. It is under pressure in there and comes out when the valve is opened.

control: power over.

below: lower down, opposite to above.

will control

control(s)

controlled

It was more than a century after Harvey had discovered the circulation of the blood that two other scientists, one English and the other French, discovered oxygen. These men saw that when a flame burns it takes something out of the air. That is why a candle goes out when it has been burning for a little time in a small amount of air. It has taken all the oxygen out of the air. You may see this by putting a lighted candle under a glass cover, so:



When the candle has used up the oxygen from the air it cannot go on burning. It cannot burn without oxygen. Its light goes out.

So with the burning that goes on inside the millions of cells of our bodies. If the blood stops carrying oxygen to the cells, they go out. They die.

scientists man of science.

so: like this; it is like this.

stops do not go on, make a stop, put an end to.

will stop

stop(s)

stopped

candles cotton cord with solid fuel round it. The heat of the flame turns the fuel to liquid and then to gas as it burns. The flame is the burning gas,

When a man is running. his heart is working much harder than when he is sitting down. His blood is being pumped more quickly through his body. The blood must carry a greater supply of oxygen to the muscles all over the body. Our hearts work for us automatically. A man's heart can pump as much as three thousand gallons of blood a day. The amount pumped at



any time is controlled automatically. After running hard a man breathes very quickly because while running he couldn't take in enough air for his oxygen needs. He is "out of breath," as we say.

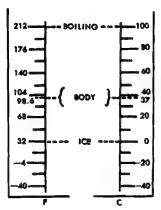
runnings going faster on foot than walking, automaticallys in an automatic way.

will run

run(s)

PRIM. PRIM

Our bodies control themselves in many other ways. For example, the temperature of our bodies (and those of all warm-blooded animals) is controlled; our blood temperature is kept at 98.6 degrees Fahrenheit, or near it.



When a person is very ill (sick) some of the automatic controls of his body stop working. His temperature, measured by a Fahrenheit thermometer, may go as high as 103°F or 104°F but if it goes much higher, or keeps as high as that for very long, he cannot go on living. He will die.

temperatures the measure of body heat on a scale.

warms having a middle degree of temperature not very different from the temperature of our bodies.

degree: temperatures are measured in degrees Fahrenheit (F) or degrees Centigrade (C). We change a temperature from Centigrade to Fahrenheit by the addition of 32 to nine fifths of the number. For example, 100°C is the boiling point of water. This is 100 times 9/5 plus 32 = 180 + 32 = 212°F.

lik not well, unwell; in some parts of the world the word sick is used.
thermometer: instrument for measuring temperature—another of Galileo's inventions.

The body has many different ways of keeping itself warm enough and not too warm. It uses up more food, more fuel for the cells, in cold weather. It shivers—that is, its muscles go on making quick little motions to keep it warm. We cannot stop ourselves from shivering. The body's heating system is not under a man's conscious control; it is automatic. To stop shivering he has to warm himself some other way: he may run or walk quickly, or take hot drinks, or cover himself up warmly, or use a hot water bottle to warm his bed.



shivering: shaking all over as an effect of cold.

warms make warm.

bots very warm, at a high temperature.

heats make hotter. We worm our hands at a fire, but we kent water on it.

will shiver will worm will best shiver(s) warm(s) beat(s) shivered warmed boated Our bodies give off some of their heat all the time by sending a little liquid out through the skin. Sometimes the amount gets greater and our skin becomes wet. This cools the body quickly.



Here the man on the left is shivering because he has been waiting in line for a long time in the cold wind. The man on the right is wet all over because he got too hot in the sun. He is drinking water because he feels the need of it. He is thirsty.

cooft make less warm.
too: more than enough.
thirsty: feeling the need to drink.

will cool

coel(s)

cooled

This man is in training. He is going to run a distance of one mile in the shortest possible time. The fastest runners before him have taken a little under four minutes and he wants to make a new record.

When a man runs a mile in four minutes he is going at a rate of fifteen miles an hour, but it is not possible to keep running at this rate very long.

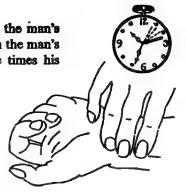
The runner is standing now in front of his doctor who has an instrument in his hand. Through this the doctor can hear the sounds made by the runner's heart.

possible: able to be done, under: in this sense, less than,

standings on his feet, not moving.

record: this is another sense of "record." When a person does something better than it has been done before we say he has made a record.

Now the doctor is taking the man's pulse. He has his finger on the man's wrist and is counting the times his heart pumps the blood in one minute. The doctor can feel the motion or pulsing of the blood every time the man's heart pumps.



In most men the pulse rate is between seventy and eighty times a minute. In children it is higher.

The runner's pulse rate is 72. It will be higher when he is running.

pulses motion of the blood through the arteries as it may be felt at points in the body, for example, the wrist, pulse retter number of pulses in a minute.

wrists and of the arm nearest the hand.

countings using numbers to discover how many.

will count

count(s)

counted

There is a good story about the use the great Italian scientist Galileo once made of his knowledge of the pulse rate.

Galileo lived three hundred years ago before men had watches for measuring time. In the sixteenth century there were very few clocks in the world and no watches.



One day when Galileo was a young man of eighteen, he was in the great church of the city of Pisa where he lived. Watching



the motion of a light hanging down on a long chain from the roof high above his head, he saw that as the light moved forward and back on its chain, it seemed to take the same time between turns, however far it went.

once: at one time in the past.
forwards to the front.

chains support made of metal rings going through one another.

however farz when it went only a short distance and when it went a longer distance.

howevers in whatever way.

To see if he was right about the motion of the light, Galileo put his fingers on his wrist. He timed the motion of the light as it went forward and back on its chain, measuring it by his pulse rate.



He was right. He had the proof. He could prove that the time was the same, however short or long the journey of the light through the air was. Galileo had made a great

discovery about the motion of a pendulum. Among other things this discovery made possible a better instrument for measuring time—the pendulum clock.



proof: that which makes clear that something is so, timed: measured the time taken by, prove: give proof, pendulum: hanging weight free to move from side to side,

will prove will time prove(s) time(s) proved timed Measuring how fast something is moving gives us the rate of motion.

This plane has gone 300 miles in half an hour. Its rate was 600 m.p.h.





This man has walked two miles in half an hour. He was walking at a rate of four miles an hour. Now he is standing. He is not moving.



This man is working slowly. His pay will be small if he is paid by the amount of work he does in a day.





This other man is working quickly. His pay will be high if he is paid by the amount of work done in a day.

The two commonest ways of paying a worker are by the hour and by the amount of work done. Piecework is work paid by the amount done. For different sorts of work rates of pay may be different. Sometimes rates for the same sort of work are different in different places.

places bit, amount, part of something solid.

m.p.k.s miles per hour, miles in an hour, measure of rate of motion

pays amount of money given for work.

will pay

pey(s)

paid

When we move about from one country to another we sometimes have to change our money, we sometimes have to change our watches and sometimes we change both. When we change our watches we move the hands forward or back: forward if we are going east and back if we are going west.

Here is a map giving time lines across the Pacific Ocean.



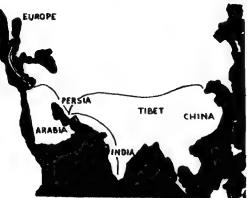
In the days when Galileo used his pulse as a timekeeper, most men did not even know that the earth was round. They knew no more about the journey of the earth around the sun than they did about the journey of their blood stream through their bodies.

But for another two thousand years most men went on thinking that the earth was flat like a large plate with the sun and stars journeying round it.

How was the idea that the earth is not flat but round like a ball proved true in the end?

Sailing men went out in their ships to find a way by water from Europe to India and China. Though some ships from the north of Europe had sailed west to parts of

America in the tenth century, most of Europe had no knowledge of the land across the Atlantic.



Men like Marco Polo had gone east to India and China, much of the way by land, long before Columbus, in 1492, went sailing west with the idea that he could get round to the Far East by water.

to find: to look for and discover or come upon, thought even if.

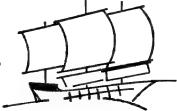
will find

find(s)

found

Christopher Columbus has gone down in history as the man who discovered America. He was looking for a way of getting to the East by sailing west. It was hard for him to get help for this journey. He was laughed at by most people when he said he could go this way to India because the earth was round.

This is the sort of ship Columbus sailed in.



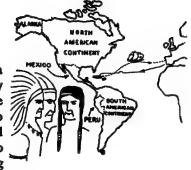
He made use of a half-hour sand glass for measuring time at sea. Through all the long months the glasses on Columbus's three ships had to be turned every half-hour as the sand ran out.



gone down: been given a place. When a person's name goes down in history something he has done is recorded in history books, could: in this sense, would be able to—as used on the opposite page.

Men living in America were named Indians by Columbus because he thought he had got to India when he discovered America. He went back to Spain without knowing that he had found a new continent. He knew nothing of the life that had

been going on in North



and South America for thousands of years or of the two great peoples, the Aztecs and the Incas, who had been living there—the one in Mexico, the other in Peru—for centuries. It is now thought that in 1500 the population of the Americas was about 30 million, and that the first of these "Indians" had come from Asia themselves. There may have been a land bridge between Asia and Alaska across which they could have come.

continents Europe, Asia, Africa, North America, South America, Australia and Antarctica are the continents of the world.

It is new thoughts scientists now think.

Thirty years after Columbus discovered America, the ship of Magellan, a sailor of Portugal, was the first to make its way south of South America and on round the world through the Indian Ocean and past the Cape of Good Hope back to Europe.



Magellan himself died on one of the Philippine Islands on April 27 (in) 1521.

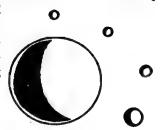
When a ship sailed out to the west and came back home from the east three years later men could see that the earth must be round. This proved that the earth was round. It was proof enough for most men.

sallers man who works on ships at sea.

But it was harder to take in the idea that the earth might be moving round the sun, as Copernicus of Poland, 1473-1543, said it was. Very few men had made any sense of the writings of Copernicus by the time he died in 1543, twenty-one years before Galileo and Shakespeare were born. Few people could read or write in those days.

It was Galileo who made the first telescope, through which he could watch the stars and look into the ideas that Copernicus and others had been working upon. Through his telescope the stars seemed more than thirty

times as near, and he could see not only the mountains of the moon but spots on the face of the sun, and the motion of the moons moving round the planet Jupiter.

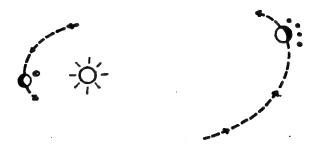


very few: opposite of very many.

spots small mark.

Jupiter: Jupiter is the name of one of the planets—great bodies which are moving round the sun as the earth is.

Galileo could let men look through his telescope but he could not make most of them see the picture of the universe that was becoming clear in his mind.



He could not do that any more than Copernicus had been able to do it. Men's ideas were changing, but not as quickly as his.

Galileo was put in prison for saying that the ideas written down by Ptolemy fifteen hundred years before did not make sense to him. Newton, who was born the year that Galileo died (1642), took the new line of thought much farther.

Like Galileo he became a great watcher and recorder, asking the question "how," more than "why," and answering by measuring and recording and comparing and proving.



Even more than Galileo, he saw the universe as part of a great machine, and he was able to put into words great natural laws—accounts of its workings.

comparing: finding where and how things are the same or different.

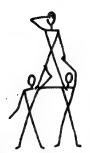
laws laws which are made by man are statements, backed by government power, controlling what men may or may not do. When some
laws are broken, the person who breaks them, if it is proved that he
did so, may be put in prison.

naturals not made by man.

natural laws statement of causes and effects at work everywhere.

will compare will break compare(s) break(s) compared broke, broken He was able to do this only because he was carried forward on the shoulders of such men as Galileo, Kepler and Copernicus. With their work before him he could think out new ideas about the weights of things and their motions. His Law of Gravitation says that all things in the universe have an attraction for one another.

It was only by standing on Newton's and other men's shoulders that Einstein (1879-1955) was able to get his picture of the universe and work out new ideas about time and space and energy.



Their work made it possible for him to see farther into the laws of the universe than they could. Younger men in their turn are developing new ideas made possible by Einstein.



about: in this sense, of, shoulders part of body between arm, neck and chest.

The thinking of scientists has become clearer and truer as their instruments have become better. Galileo made one of the first microscopes as well as the first telescope, and by the middle of the seventeenth century this new instrument had opened up to man another world, a world of things too small for our eyes by themselves to see.

The microscope made possible the discovery of the cell structure of all living things.



Even the body of man himself could be pictured now as a great machine with millions upon millions of working parts, each part a cell.

a microscope

structure: how a thing is made up; the way its parts are put-together.

The structure of the plant stem in the picture above, right, is made clearer by the microscope.

Together with all this new knowledge of the cell structure of plants and animals, the microscope opened up a world of living beings so small that men had had no idea such things were possible.

It was a surprise to the scientist to see that in a drop of water there might be thousands of living things of many different sorts moving about and taking in food.



With the invention of such instruments as the microscope and telescope man found himself walking between two strange new worlds: one too far off and great, the other too near and small for anyone but the scientist to know much about or do much about. As science developed, thinking men came to feel less and less at home in the universe. They had enough knowledge to become conscious of the need for more.

Our bodies can be looked upon as machines which are kept going by fuel. As food is burned up in the body cells it gives us heat and other sorts of energy. All through a man's life—from birth to death—he must be supplied with energy.

Even when we are sleeping we are using up some food to keep our bodies warm. Our lungs and heart keep on working. Some animals sleep through the cold winter weather: snakes, for example.

When they are asleep their rate of breathing and pulse rate and temperature go down, and less food is needed



Only animals that can store enough fat in their bodies to keep them alive through the winter can sleep through the months when food is hard to get.

lifes time of living. deaths end of living.

eneckes a long narrow-bodied animal with no legs. Some sorts of snakes have poison in their long, needlesharp front teeth. If this poison gets into your blood stream it can cause death in a few minutes.



asleep: sleeping; opposite of awake.

will sleep

sleep(s)

slept

While our bodies are at rest the large muscles are not in use. It is these large muscles which pull on our bones and let us move as we want to.

Hard work with our large muscles uses up energy quickly so that we come to feel hungry and want to eat.

The more we know about the parts of our bodies and their work, the more new questions come to our minds, questions such as:



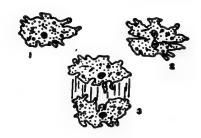
How is it possible for all the different parts of us to grow from one cell?

How is it possible for all the millions of cells in our growing bodies to go on doing what they do without our being conscious of their workings?

while: through the time that; in the time when, hungry: feeling need and desire for food.

Through about two billion (2,000,000,000) years, scientists say, the development of plants and animals on our earth has been going on. At first both were very small, much less than a pin point in size. We might say that the first plants or animals were bodies living in one-roomed houses, too small for man's eye to see. All the house-

keeping went on in one room. Such cells take food in and let waste out. They do not give birth to new cells but divide to become two daughter cells.



These three pictures show the division of a cell into two separate cells each of which may in turn divide into two more.

much lesse a great amount less.
shows make clear, let be seen.
divisions becoming two (or more) in place of one.
separates not together.
divides make a division; become two or more.

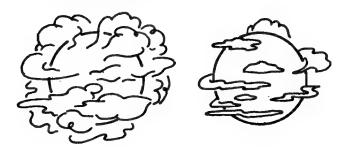
will divide

divide(s)

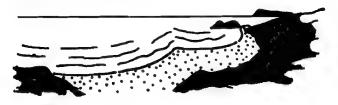
divided

The earth itself is thought to be more than twice as old as life on it. Our picture of what it was like two billion (2,000,000,000) years ago is of a great ball about as hot on its surface as boiling water.

In time, as the earth's surface became less hot, the thick clouds round it, from which water went on raining down, got thinner. Then more sunlight could get through to the surface of the earth. Sunlight is necessary for life on earth, as air and water are.



Life began, men think, in the salt sea. Near the land, where the waters were not deep, very small one-celled organisms came into being.



The cells in our bodies are of many different sorts but they all have water in them. Our bodies are seventy per cent water.

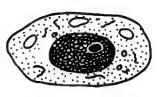
This water has in it about the same amount of salt, common table salt, as there was in the water of the sea in which the earliest organisms swam. That water was a little less salt than sea water is today. In billions of years the rivers have washed down more and more salt from the land into the sea. The sea has become more salt. The water in our bodies does not become more salt. Even if we eat a great amount of salt in our food the body automatically controls how much it will keep in the blood stream. And the same is true if we let very much salt out through the skin when we get overheated. (See page 91.) Then we have to eat something that will give us new supplies of salt.

organisms living body.

per cents in a hundred. Seventy per cent (70%), seventy parts in a hundred. (Latin, per centum.)

The first living things, though they were too small to be seen, were eating, growing organisms which divided to become others like them.

Under a microscope, a cell looks like a bit of clear jelly with a thin wall round it. Very small openings in the walls of the cell let food in and waste out.



In every cell there is a part like a little ball. This is the nucleus, which organizes the work of the cell. Though cells were discovered two and a half centuries ago, it is only in the last hundred years that knowledge of the work of the nucleus has developed. It is this nucleus which keeps the cell working at what has to be done. It is to the cell what London is to Britain, New Delhi to India, Peking to China. It is the seat of government.

jetty: a soft material, not solid and not liquid.

nucleus: see above on this page.

ergenize: give every part its work to do and control it.

All living things are developments from these one-celled organisms. They have developed step by step through

change upon change from these first, simple, living things. Our bodies and the bodies of the plants and animals we see about us are highly complex in their structure. They have in them millions of millions of cells, some doing one sort of work, some another. Every different cell has its own sort of work to do.

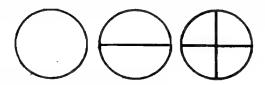


What do the words simple and complex mean?

simple: not complex, complex: not simple (see next page).

The greater the number of parts a thing has, the more complex it is.

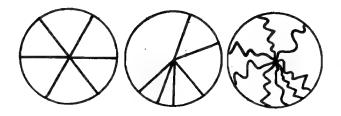
The smaller the number of parts a thing has, the simpler it is.



Which of these is the more complex?

The more different the parts of a thing are from one another, the more complex it is.

The less different the parts of a thing are from one another, the less complex it is.



Which of these is more complex?

The more the parts of a thing need one another, the more complex it is.

Take one little wheel out of a watch, for example, and see if the other parts can do their work without it.

Which is more complex—a stone or a plant?

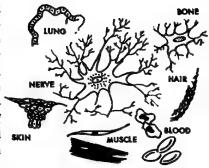


The leaves, the flower, stem and roots of the plant work together to keep it alive. But each does a different sort of work and each is dependent upon all the others. The work of each part is different.

The parts of a stone do not work in this way for one another. A stone is a much simpler thing than a plant.

Any living thing, however small or simple it may seem, is far more complex than anything which has no life.

People are the most complex of all organisms, far more complex than any plant. A man would not go on living, he would die, if the millions of millions of cells in his body did not work together in their different ways,



each doing its own sort of work. The cells are dependent upon one another and the man is dependent upon his cells.

The picture below shows what the word dependent can mean.

The girl in the middle is dependent on both men to keep her from falling. The man who has been holding her feet is letting go as the other man takes hold of her hands. She has been dependent on the first man. She will be dependent on the second. Their act depends on timing.

their acts what they do. A mon's acts are what he does. depends: is dependent on, letting gos letting them go.

will depend

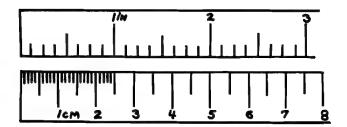
depend(s)

depended

There are about five million red cells in one cubic millimeter of our blood. One millimeter is a thousandth part of a meter and a tenth of a centimeter.

One cubic centimeter—how much space does that take up?

Here is a picture of a cube which is one centimeter long, one centimeter wide and one centimeter high. It takes up one cubic centimeter of space. A centimeter is a little less than half an inch.



millimeter: mm, = ,001 of a meter.

centimeter: cm. = .01 of a meter, or .3937 of an inch.

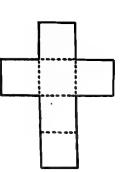
cubes a solid the six sides of which are equal squares.

squares a square has four sides which are equal and four angles which are right angles

You can put a paper cube this size together for yourself, or cut one out of soap or cheese.

To make a paper cube, take a pencil and make six onecentimeter squares like this:

Now take your scissors and cut round the outer lines. Do not cut the broken lines but make folds there. Put the edges together to make a hollow paper cube, as in the picture. Your cube will be a cubic centimeter in size.



A cube has six sides; its sides are equal squares. The surface of a one-centimeter cube is six square centimeters. In one cubic centimeter of our blood there are about five billion red cells.

folds this is a page folded down.

odges this is the edge of the page.



Living things are made up of cells, and cells do not grow to be more than twice the size they were at first.



But trees can grow to be many thousands of times the size they were as seeds. The tallest tree known is 364 feet high. One great tree in California is as much as 115 feet round its trunk at the thickest point.

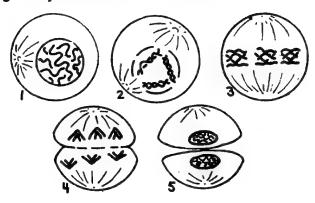
How does such growth take place if cells do not grow to be more than twice as large as they were at first?

It all takes place through division. The cells which make up the organism are able to divide into two and this division goes on and on. When you were born you had as many as 200 billion cells in your body all coming, in nine months, from the division of one cell 1/175th of an inch across.

trunks stem of a tree.

grawits: growing, becoming greater in number or size, the outcome of growing.

All organisms which you see in the world about you have grown by cell division.



You and I have become what we are through billions of divisions in the cells whose outcome is our cell structure at this minute.

In cell division the two halves of the cell (as you see in picture four) become ready to separate. In picture five you see that they have separated. The cell in picture one, by division, has become two separate cells. The daughter cells do in every way the same as their mother cell did. One of the greatest questions scientists are working on is: What keeps the daughter cells doing what they have to do?

separate: become or make separate.

will separate

separate(s)

senaveled

Even the simplest living organism is far more complex than any machines that men have made. Organisms are built up of parts which are themselves more complex than any machine. And these parts in turn are the most complex things the science of chemistry knows. It is because they are so complex that they can work together in an organism in so many different ways.

Chemistry is about the different ways in which different materials are built up. For example:

Water is made up of oxygen and hydrogen united in a way which may be represented like this.

Carbon dioxide is made up of carbon and oxygen in a way which may be represented like this.



Chemists make use of the formula H₂O for water in their writing. They use formulas to represent the structure of all material things.

The most important of the materials in our bodies are the proteins (from Greek proteins, meaning "having first place"). Among them are materials with the most complex structures known to the chemist. We can get some idea of how complex proteins are by comparing the formula for one of them with the formula for water (H₂O) or for carbon dioxide (CO₂).

Compare this formula for a protein from milk:

C1.84 N. S2 O57

with the simple formulas for water:

H,O

or carbon dioxide:

CO.

The letter N in this formula represents nitrogen and the letter S represents sulphur.

among: in, in the sense of being part of a group.

mitrogens a gas which makes up about four fifths of air. Nitrogen is breathed in and out unchanged. Our bodies have to get the nitrogen they need in other ways.

sulphur: a light-yellow material found in some parts of the earth in areat amounts.

There may be as many as 100,000 different sorts of proteins in a man's body, at work in as many different ways.

It is a protein in our blood which takes up oxygen from the air we breathe into our lungs and carries it to the cells which need it. It is another protein which makes our bones strong, and another which makes our muscles able to pull on and move our bones. It is other proteins in our hair and skin and nails which make them what they are.



Others again do very important work in the digestion of food, in controlling other changes in the body, in keeping it healthy and in making children become so surprisingly like their parents.





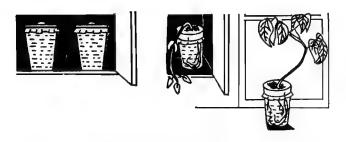
nail: finger nail, toe nail. Our nails are living parts of us.

digestion: the changing of food in the mouth and stomach so that
materials in the food may be used by the body.

How do these very complex materials come into being? The answer is, through the work of plants.

Plants need sunlight. This is common knowledge within the experience of most of us, but you can show how true it is if you make this little experiment.

Grow two bean seeds over glasses of water, starting them in a dark cupboard. After a few days take one glass out into the daylight and keep the other in the dark. Compare the two from time to time. You will find that it is the plant in the light which grows a strong stem and green leaves.



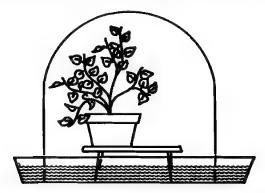
within: in; inside. Not on apposite of without as commonly used (see page 32).

experience: knowledge we get as we go on living, seeing what goes on, and thinking about it.

experiment: getting knowledge by daing something so that you are able to watch what takes place and find what in the outcome is dependent upon what.

bean: cammon plant whose seeds, and sametimes seed coverings, are used far food.

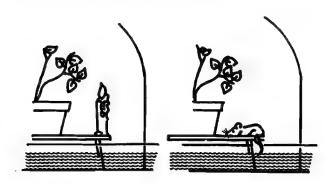
In 1772 the Englishman Joseph Priestley, the discoverer of oxygen, made a most important experiment. He knew from experience that air is necessary to plants and animals. He knew that if you put a live mouse, for example, under a glass so that no fresh air can come to it, the mouse in a short time will die. It will have taken all the oxygen out of the air and without oxygen it cannot go on living.



Priestley put a green plant under a large glass cover standing in water so that no fresh air could get in. He thought that in a little while he would find the plant dead like the mouse.

But no. Here is what he said:

"When it had gone on growing there for some months, I found that the air would neither put out a candle nor was it bad for a mouse which I put into it."



In other words, the green plant had not used up all the oxygen in the air.

The next step was taken when a Dutch scientist found that Priestley's experiment would not work without light. In the light a plant gives out oxygen and builds up sugars and other complex materials in itself. In the dark (without light) it gives out carbon dioxide and water.

had gone on growing: had been growing; had grown. We go on growing until we have grown up and are grownups.

either, or one or the other of two.

The material which makes plants green (chlorophyll) is necessary if they are to use energy from light for healthy growth. Unlike animals, plants can take what they need straight from the air and earth and water in which they live. Through their green leaves and stems they separate H from H₂O and unite it with CO₂ to make carbohydrates.

Structure of part of a carbohydrate, a sugar.

This power of plants is named photosynthesis (from the Greek words for *light* and *putting together*). Men and animals depend upon photosynthesis in plants to supply their food and energy. We and the animals either eat plants or eat plant-eating animals or both.

carbohydrate: any of a number of materials made by green plants from carbon, hydrogen and oxygen and used for growth or stored for future use.

When we think it out we can see that most of the energy man uses comes from the sun by way of the materials which plants build up in photosynthesis.



Scientists know only a little, so far, about photosynthesis. It is only a little more than a hundred years since the first account of it was given by the German scientist von Mayer. But with more experimenting being done every year, much more will certainly be known before very long.

The rate at which scientific knowledge is increasing is going up all the time.

In time (but we may have to wait a long time before this) it may even be possible to use the energy of light itself in industry to do in our factories something like what plants do in their green cells.

sinces from the time when,

scientific: of, to do with, used in science, waits be waiting.

will welt

wait(s)

waited

industry: making things on a large scale; the automobile industry, shipbuilding industry, clothing industry, for example.

Before long, we may learn from working on photosynthesis how to make or grow more food. As we have seen (page 13 above) more than half the population of the planet is short of food. As more and more people are born, the need for new food supplies will increase. It may be that we can find what we want in the sea. It is thought that as much as 90 per cent of the photosynthesis which takes place in the world goes on in microscopic water plants in the sea. Maybe much of the food people are going to need in the future will come out of the oceans.

Or making food straight from complexes of carbon, hydrogen and oxygen may become a great new industry.

At present we have to get most of the energy used in industry by burning coal and oil and other fuels.

microscopic: so small that we have to use a microscope to see them. maybe: it may be that...possibly.

oils the oils are a large group of liquids of many sorts. Some we get from plants (the olive tree, for example), some from onimals (fish oils), some from deep down in the earth. Oils are lighter than water, burn easily and have many uses. One of their chief uses is as fuel for gasoline engines. Gasoline (or petroleum) is "gas" in the U.S.A. but "petrol" in Britain.

This energy is the sun's energy stored up long ago by plants. Coal comes from the dead bodies of plants stored, away from the air and under pressure, through millions of years in great beds in the earth. The amount of coal and oil in the earth is, it is true, very great, but the amount we are using today is great too. A time may come before long when men will have used up all the coal and oil that is easy to get at.



Men have been taking oil out of the earth only since about 1860. Without oil there would be no cars and no airplanes. It is strange to think that

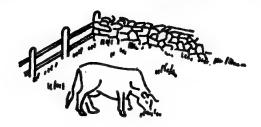
planes depend on what plants were doing millions of years ago.



Plants and animals all need air. Only about one fifth (1/5) of the air is oxygen. The other four fifths is another gas, without taste, smell or color, named nitrogen. Both plants and animals need nitrogen as well as oxygen but they cannot take it from the air themselves. How do they get their supply of nitrogen?



There are very small organisms in soil and water which can take nitrogen out of the air and fix it in complex materials which plants and animals can use. These materials are taken up by plants through their roots in water from the soil. Animals get their nitrogen by eating plants. Some of this nitrogen comes away in animal waste and men have for many thousands of years known enough to put animal waste back into the soil to help plants grow.



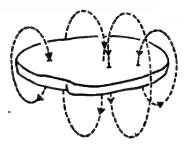
soll: earth in which plants can grow. flx: make fixed; keep something from changing.

will fix

fix (es)

fixed

Nitrogen, like carbon, oxygen and hydrogen, is used over and over again in support of life. Plants build nitrogen up into complex structures. Animals eat the plants. Then animal waste and dead plants and fallen leaves are broken down into simpler forms again.



So the great round goes on without end, all made possible only by energy coming from the sun.

Scientists say that all the oxygen and all the carbon dioxide now in the air have been put there after use by plants through photosynthesis.

fallent fallen leaves are leaves which fell from trees

The fall of the leaves takes place in the fall of the year when they
fall from the branches.

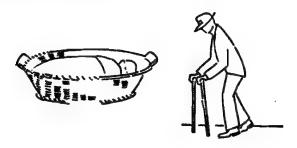
will fall

fell(s)

fell, fallen

All organisms, it is clear, have a number of needs in common, of which air, water, food and the sun's light and heat are the chief.

But men have many other needs, though we may not think of them as needs. One of them, our need for other people, is very important. First of all, we need other people to do things for us when we are very young or very old, or when we are ill.



We need others to take care of us. We need their help. We need them to do things for us which we cannot do for ourselves. We need their love.

cares when people look after us, do things for us which we need to have done, they take care of us, they help us.

lover warm feeling for. Desire to take care of a person is one sort of love. There are many sorts of love

Every hour of our lives we do things that are possible only because of work which is done for us by other people.



Who grew the cotton? Who made the sheets? Who watched the sheep? Who washed the wool? Who made the blankets for the bed you sleep in?

Whose work are you using when you turn on the light?

Who mined the coal which gives the power to heat and light your room?



But equally men need to do things for other people. Most men are not happy if they are not in some way helping others—doing things for others. They need someone to love.

sheet: cotton cover used on bed for sleeping on or under.
blanket: warm wool bed cover,

will wash will mine will light will love wash(es) mine(s) light(s) love(s) washed mined lighted laved All our lives we need other people.

In many parts of the world families do everything for themselves.

Until the nineteenth century this was true almost everywhere outside the cities. Families were self-supporting.

They grew the food they needed,

built their own houses, and

made their own clothing and furniture,

the candles for lighting the rooms at night,

and the plows and carts for work on the farm by day...

In every way they took care of themselves. Living like this, a family is very like a simple organism.



But a man living in a city today is more like a cell in a complex organism. Other people whom he does not know do almost everything for him. Workers in factories make the things he needs and send them to the stores, which sell them to him.

Other people teach his children in schools and take care of them in hospitals when they are ill. Police and fire stations keep watch over his city. Lighting and water supplies, the clearing away of waste, the upkeep of streets and roads are all public services.



In exchange for all this, each of us does his own sort of work, his daily round, whatever it is. This is true for most of us, if not all. People need play as well as work, though, if your interest is deep enough, work and play can be the same thing. To some people all their best work is a sort of play. They get so much pleasure from it and are so interested in it that they work when they don't need to. They are doing what they want most to do.



It was the philosopher Plato who said, "All learning is best done as play. Nothing learned under pressure takes root rightly in the mind. So let children's work be a sort of play."

Interests attraction of the mind to something, pleasure in knowledge of something or in doing something.

philosopher: thinker, lover of knowledge (from two Greek words: philos, loving; sophos, wise). One who is interested in all things.

People need work and play for the body and for the mind.

They need music ...



... rest and change.

They need books and talk with other men: with old friends as well as with new people. They need new knowledge to keep their old knowledge clear and living.

A friend is someone you know and love and with whom you have much in common. People you know only a little are not your friends in this sense though they may become your friends if you get to know them better.

dancing: moving in time to music.

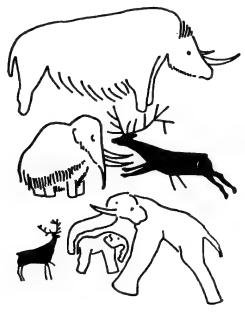
will dance

dance (s)

danced

Men need to see beautiful things and to have beautiful things about them.

Drawing goes back very far in man's past. The drawings of animals copied on this page may have been made as early as 25,000 B.C.



drawing: making pictures with lines, copied: a copy of something is another thing made as much like it as possible.

will draw will copy draw(s)
copy(les)

drew, draws copied Drawing can help to make ideas easier—the pictures drawn in this book, for example.

But the greatest drawing and painting and sculpture can make our highest powers come into play. The drawings below are of two pieces of sculpture, one from India and the other from Africa.

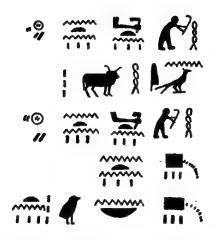


Sculpture: making beautiful things from stone, wood, metal or other moterials; the works so made.

For great drawings, see The Pocket Book of Great Drawings by Paul J. Sachs.

Men need to hear beautiful things.

Music may go back still farther in time than the other arts, but unhappily we have no records of music before the discovery of writing. As with language the writing of music may have started with pictures.



Today not only do we have ways of writing down music, but we can make copies of the sound of music as it is played.

arts work done to feed the mind and heart through the senses and feetings: painting, sculpture, music, etc.

Men need to make beautiful things.



Today the great cities of the world have public art galleries and museums where anyone may see the paintings and drawings and sculpture of artists through the centuries.

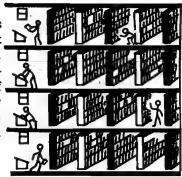


artists worker at one of the arts.

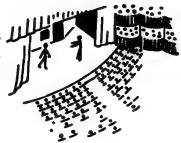
art gallery: building where works of art are kept for people to look at.

museum: building where important works of art, science, history, etc.,
are housed.

Great cities have theaters where plays of the past and the present are acted. They have music buildings where great works of music are played. They have libraries where the best that has been thought and written can be found.



Art and music and poetry come out of man's greatest hours with himself, and give other men some of their greatest hours.



theater: building where plays are given, acted: when a play is given, it is acted by actors (players).

Hibrary: building or room for keeping books; the books kept there, poetry: words put together in the best way so that others can see and feel what they mean.

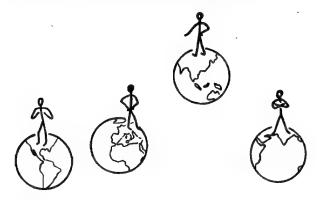
will act

act(s)

acted

We need to be alone sometimes to get to know ourselves better, though we need to be with other people too, to get to know them better and ourselves through them.

The more men know one another, the better able they will be to live together in the world. The nations on the earth—the Chinese, the Indians, the British, the Russians, the Germans, the Americans, the French and the others—know very little about one another. They look in different directions and have different ideas of themselves and of the world. They live in different worlds.

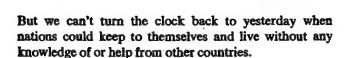


This is good only if they have bridges between their separate worlds and get to know enough about each other.

alone: by one's self (oneself); not with others, nations; countries and peoples under independent government, independent; not dependent,

A little knowledge about other nations—too little knowledge—can make

them seem bad.



The thing to do now is to get more knowledge about other peoples. And knowledge of other languages is necessary for this. We need many more people with a deep knowledge of other languages than their own.

We have to know a language well if we are to know what people who use it mean and think.

say what we mean or mean what we say. This is true of some of the things we say every day. For example: "How do you do?" "How are you?" This is what people say on meeting. Sometimes they stop and shake hands. "How are you?" looks like a question. It is written with a question mark after it. And sometimes "How

are you?" is a question. One person may want to know if another is well or ill—how his health is—and so on.

In English—as in any other language—we do not always

meeting: coming together.

shake hands: when two people shake hands each takes the right hond of the other in his for a second.

beaths a man who has good health is healthy. A man in bad health is ill or sick much of the time. Taking care of the health of the public is an important part of the work of good government. Care of the health of everyone in the world is becoming increasingly necessary to all nations. The World Health Organization (WHO) was started in 1947.

When these are questions they are almost always said as if the person who says them means them as questions and wants an answer.



But most of the time they are said in a way which does not ask for any answer. When these words are said so, we do not answer: "I am tired," or "I have a bad cold," or "I am not well." We say the same thing back to the other person:



thing back to the other person: "How are you?" or "Hullo!" Such words are like a smile or a wave of the hand.

In the same way, when we meet someone in the morning, we may say "Good morning!" The weather may be very bad but we say "Good morning!" and the other person will say "Good morning!"



back to us. We are not talking about the weather or about how good or bad the morning is.

tired: in need of a rest.
meet: come together with,

will meet

meet(s)

med

Again, when people are parting, they may say: "Good morning!" or "Good afternoon!" or "Good evening!" or "Good night!" to one another in place of "Good-by!" They are not talking about the weather but saying "May all be well with you at this time!"

You will find few people today who know that "Goodby!" is a short way of saying "God be with you!" But in times past, when religion had more place than it now has in education, a child could be taught this very young as part of his knowledge of English.

parting: separating, going away from one another, afternoon: part of the day which comes after noon (12:00) and before night.

evenings late afternoon and early night.

15

noon: (12:00) point of time between morning and afternoon,

Gods in Christian teaching, that Being on Whom all other beings depend. religions thought, feeling, desire for, interest in man's deepest needs.

There was a teacher who tried to teach all this. Her students seemed to take in what she taught them. They said back to her all together: "When you say 'Good morning!' to us, we say 'Good morning!' to you."

Next morning on her way to school, she saw one of them coming. She said to herself, "Now I will see if he has learned that point about 'Good morning!'"

So she said to the young man:

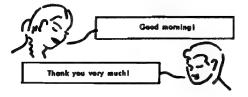


She had said "Good morning" to him with a question in her mind: "Will he say 'Good morning!"?" She had asked a question and he had answered it.

The teacher said to herself: "I must have seemed to be asking a question, so he gave me an answer. Next time I will do better."

At that minute she saw another student coming. She said to herself, "Let me try again."

So she gave the young man a friendly smile and said,



"What was wrong then?" the teacher asked herself. "I must have said it as if I were giving him something. That was why he thanked me. Next time I must keep that out of my voice."

She saw a third student coming. This time she wanted the answer "Good morning!" so much that her voice became hard and sharp.



You see how little one person may know what is in another's mind even when the other is trying to show him.

please!: may it be your pleasure; may it please you.

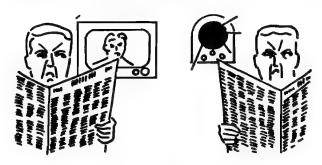
will thank will please thank(s)
please(s)

thanked pleased

thank: say it was good of a person to have done what he did; give him thanks; say "Thank you."

When people are from very different countries with very different ways, it can be hard for them to understand one another. Not very long ago the number of people who knew anything about people in other countries was very small. Few people went far from home or took much interest in other countries.

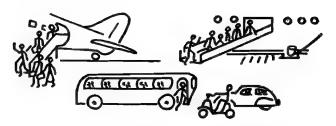
Today all this is changed. Every day, men hear more and more about other countries and about how bad their governments are. They hear about the strange and wrong ideas other countries have of them.



If we knew them better, we would see that people everywhere are very much like ourselves: not very good or very bad, but in between and able to become better or worse than they are. Men's minds are as like one another as their bodies are.

to understand a person: to see what his ideas and feelings may be.
will understand understand(s) understood

We say: "The earth is getting smaller." It is the same size as it was, but we can go about it more and more easily. Many more people travel outside their own countries every year.



We can get news today from any part of the world in a few seconds, though we may not always understand it.

Many more ideas, right or wrong, about other countries are in people's minds.

Most of this interest in other nations and places is good if it goes deep enough. We need to know more. If we can keep our heads on our shoulders, the wider knowledge and experience which are coming will help the world to better days.

understand something: have a clear, true idea of it. travel: make a journey, go.

will travel

travel(s)

أمملميسية

The earth seems to be getting smaller because mea's experience is getting wider. All sorts of new ways of living and new ways of doing things have come to us in the last fifty years.

Stranger things are coming.

(15 Sec)

Men can today travel through space to the moon,

What is Space? That is hard to say. It is equally hard to say what Time is. We and the sun and the moon and the stars are all in Space and Time. But no one understands what Space and Time are. Not even the best philosophers are clear about them.



These two men know that they have a space between them without being able to say what Space is.



There is not enough space in this car for all these travelers. They know that this is so, though they cannot say

what Space is.



There is more space free on this page than on some other pages of the book which take longer to read.

traveler: person who travels.

It is equally hard to say what Time is.



This man has time on his hands.



This other man has not enough time for his reading.

The same amount of time may seem very short to one person and very long to another. A man's sense of time changes as his feelings change. Some days go by much more quickly than others. Some hours seem as if they would never end. Some are past before they seem to have begun.

Most people find that time goes by more quickly the older they get.

BEARL DOL SAST

ends come to an eads apposite of begin.

end(s) ended

will and

Our ideas about Space and Time are changing. Today we can fly round the world in twenty-four hours.



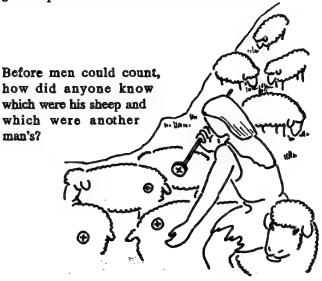
The earth turns round on itself in twenty-four hours.

A man in a plane flying west at 1000 miles an hour (m.p.h.) would see the earth turning. The sun would seem to be in the same place in the sky for him. The earth would turn under him.



A hundred years ago men of learning thought that the world was only about 6000 years old. Now scientists say that it is nearer six billion years old and that Man himself is at least five hundred thousand.

Air travel would have seemed very strange two or three thousand years ago, to men keeping their sheep on the mountainsides. All these changes are the outcome of the great step taken in the invention of numbers.



He put his mark on his sheep. He was their owner. They were his own sheep. He owned them.

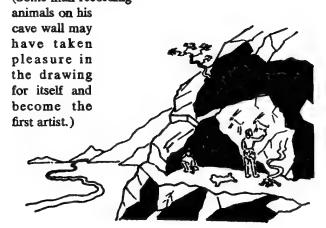
Sometimes he gave his sheep names, and then he would go through all the names—with his sheep—to see if they were all there.

will ows ows(5) owner

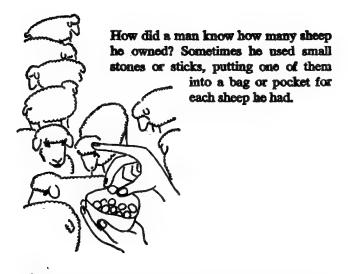
Before the invention of writing how did men keep records? They made pictures on soft earth or sand. But rain and wind and waves quickly washed away such records. Smooth stone or wood was better, and best of all, the smooth stone walls of caves whose roofs kept the rain and wind away.

It may be that the drawings copied on page 142, or others like them, were records made by early men.

(Some man recording



cave: deep hole or hollow in side of mountain. Men lived in caves long before they knew how to build themselves houses. wash aways take away by the motion of water over something.



When he came to the end of his sheep, the number of stones in the bag was the same as the number of his sheep. The stones and the sheep were equal in number. The stones gave him a record of how many sheep he owned. When a sheep died he could take a stone out of the bag. And when lambs were born he could put in another stone for each lamb.

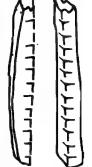
immb: boby sheep, young sheep. In the U.S.A. meat from sheep is lamb.

In Britain, the word mutton (from French for sheep) is used for the meat of full-grown sheep.

Sometimes a record was made by taking a sharp, hard stone and making cuts on a stick. The number of cuts in the stick equaled the number of things to be recorded.



Then the stick was cut in half down the middle so that each half had half of every cut on it. The two half sticks were tallies. If they were put side by side, the halves of the cuts came together. They tallied. One man took one tally and another the other, and both then had the record.



tally: one sort of record.

will equal will tally

equal(s) tally(les) equaled tallied Tallies are some of the earliest and simplest records of the numbers of things. They tell how many things have been counted.

Even today in a bank a man who takes money in and gives it out is sometimes named a teller.



The shelf or table at which he works is a counter. On it he does his counting of the money coming in and going out. He keeps a record of all this in his account book.

A man who makes a statement tells something. Most banks make a statement every month to each person banking with them to tell him what his account is. The statement tells him how much money he has in the bank at that date. Then both he and the bank have the record straight.

To get this statement ready, the banker has to take the amount of money given out (for any one person) from the amount of money put in.

tell: give an account of, give a story to someone.
straight: in this sense, right.

will tell

tell(s)

Sald

A bank teller must keep a complete record of the money he takes in and gives out. This is his way of making certain that his accounts are in order. Banking is a very important sort of business. A bank must keep all its accounts in good order and the statements which the bank makes must be true statements.

STATEMENT OF ACCOUNT—TOWN BANK Mr. John Smith, 11 First Street					
TUC	IN	DATE	NO.	BALANCE	
		5/ 3/54		860.83	
0.00		5/ 5/54	1 1	850.83	
	62.55	5/ 7/54	1 1	913.38	
	50,00	5/14/54	1 1	963.38	
0.00		5/15/54	2	883.38	
2.94		5/15/54	3	840.44	
5.00		5/18/54	4	825.44	
	30.00	5/21/54	1 1	855.44	
0.00		5/24/54	5	635.44	
1.95		5/26/54	6	793.49	

making certains proving to himself and to others.

in order: with nothing wrong. Things are in order when in their right places. When a man is in good health, his body is "in order." When he is ill, it is "out of order." The work of the police is a country is to help to keep law and order.





How do we know whether a man is telling the truth? If a man tells another that he will give him three bags of grain for one sheep, the other will know whether he told the truth when he gets the grain or doesn't.

The man may, or may not, have meant to give the grain when he said he would. He may not have meant to say anything but the truth. But if he did not give the grain later, he was not true to his word.

We sometimes know whether a man is telling the truth (and will be true to his word) by the look in his eye, or the sound of his voice.

In early times, before men invented money, they did all their business by exchange of goods. Men traded with other men by exchanging goods they were willing to give up for goods they wanted more. Exchange of things still goes on in some parts of the world today.



After the invention of money, trade increased. It is man's experience that money can be a great help in making trade easier and in keeping business in better order. If you want something and have the money for it, you can buy it. You do not have to keep asking yourself whether you have something which the other man will be willing to take in exchange for what you want.

exchange: giving one thing for onother.

willing: if you are willing to do something you will do it if you have to.
still: up to the present time.

trade: exchange of things for other things or money.

will trade will invent trade(s) invent(s) traded invented Early man did things with his hands which we do with instruments or by machine.



Fingers were made before forks.







Among their early uses, fingers made good counters. We still use the number ten as the key to our number system because we have ten fingers.



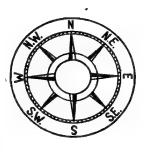
The most important number in the number system used commonly today is zero (0). Zero is so easy to use that it is hard to understand why it was not invented long ago. It is thought to be not much more than a thousand years old and no one knows who invented it.

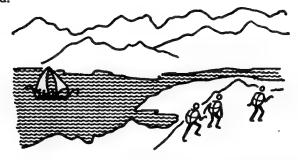
We use zeroes to change numbers to others. Zero to the right of a number makes it ten times its size. Two zeroes make it a hundred times its size. Six zeroes after one make it mean one million.

Schools today teach a child to add, subtract, multiply and divide numbers. Here are examples.

addition;	5 + 5 = 10;	6 + 3 = 9
subtraction:	5-5=0;	6 - 3 = 3
multiplication:	$5 \times 5 = 25$;	$6 \times 3 = 18$
division:	$5 \div 5 = 1$:	$6 \div 3 = 2$

Men made their way about on the earth, over mountains, down rivers and across seas long before they had a number system or could make or use a compass. Nobody knows who invented the compass. The Chinese, Arabs, Greeks and Italians, among others, say they did.





When men became able to work out the relations of lines and spaces to one another, and could measure distances and angles, the science of geometry, earth measuring, began.

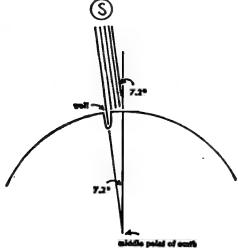
Men went on then from measuring fields and bits of land, to measure the size of the earth itself.

compass: instrument showing the direction of something in relation to the north.

geometry: science which looks into the relations of lines and spaces to one another, from two Greek words, ge—earth, and metron—a measure.

The Greek scientist Eratosthenes (276-194 B.C.) was the first man to work out the size of the earth.

He heard that there was a deep well into which on one day of the year the sun's light went all the way down to the bottom. He took the angle of the sun at the same hour from another place 500 miles from the well and worked out by geometry that the earth was about 29,000 miles round.



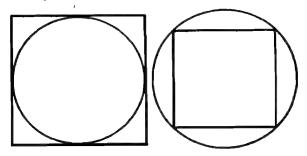
The size of the earth, scientists now tell us, is about 25,000 miles round.

wells here, a deep hole in the earth from which water is got.

Settems lowest part, opposite of "top," This is the bottom of the glass.



Geometry starts with ideas about lines and spaces.



Here are two circles and two squares.

The circle on the left is inside a square. That is the relation of that circle to that square.

The square on the right is inside a circle. That is its relation to the circle.

These are facts about the circles and squares on this page.

Statements which tally with facts are true. Statements which don't tally with facts are not true. It is untrue that the square on the right is outside the circle. To say it is would be to make a false statement.

What is a circle?

It is easy to see what it is, but not equally easy to say what it is. Here is a straight line half an inch long. If you

could turn the line right round like the hand of a watch, it would have covered a circle. One end of the line would have to keep in the same place while the rest of the line was turning.

Here is another line the same length; it is half an inch long. If you could pull it down like a map on a roller a distance equal to its

own length (½ inch) then it would make a square with sides half an inch long.

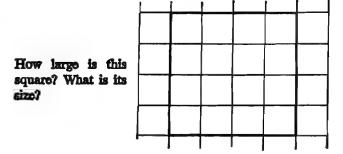


This is not a square though its sides are equal. Why not? Because its angles are not right angles.

This is not a square though its angles are right angles. Why not? Because its sides are not all equal.



rest: in this sense, the other parts. lengths distance long. Six thousand years ago in Egypt there were men who saw how to measure their land through their knowledge about squares and triangles.



Because the square is on squared paper, it is easy to see what its size is. We count the number of small squares in the large square. This number is the area of the square.

If the small squares were an inch square, the area of the large square would be sixteen square inches. If they were one foot square, the area of the large square would be sixteen square feet. If they were one yard square, the area of the large square would be sixteen square yards. Whatever the unit of measure used the relation of side to area is the same.

Men took the first units of long measure from their bodies. The end of a man's thumb is about one inch long. A tail man's foot is about twelve inches or one foot long.



A long step is about three feet or one yard long. The simplest way of measuring a short distance is to step it.



These units of long measure have been a great help to man. They have made it possible for him to measure and compare lengths and areas and volumes. Measuring lets us build a room the size and shape we want it, for example, twenty feet long, sixteen feet wide and twelve feet high.

will step

etep(s)

Seggeta

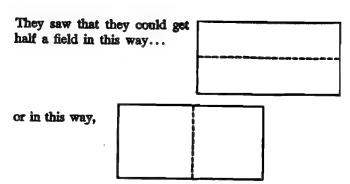
Volume: cubic space. The volume of the cube on page 121 is one cubic centimeter.

shaper outline. All squares are the same shape but they can be different sizes, All circles are the same shape but not all triangles.

Men walked across their fields; they planted them an took in the grain. They knew how much land they ha from working them before they could measure them. They saw that a field like this was the same size, though not the same shape, as a field like this before they knew that they could measure how lon and how wide a field was, and then get the area by taking one measure times the other.	will plant	plant(s)	planted
took in the grain. They knew how much land they ha from working them before they could measure then They saw that a field like this was the same size, though not the same shape, as a	and how wide a fiel	ld was, and then	measure how long get the area by tak-
took in the grain. They knew how much land they ha from working them before they could measure then	not the same shape		
took in the grain. They knew how much land they ha	They saw that a field	i like this	
	took in the grain.	They knew how r	nuch land they had
or like this.	or like this,		

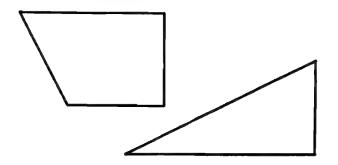
Sometimes a man's fields were not square. Some of

them were like this:



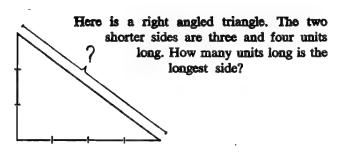
before they knew how to measure rectangles or triangles.

Can you see whether these two fields have the same area?



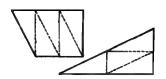
Put in lines to prove that they are or are not equal in area. The answer is at the bottom of page 178.

rectangles a rectangle bas four straight sides and four right angles.

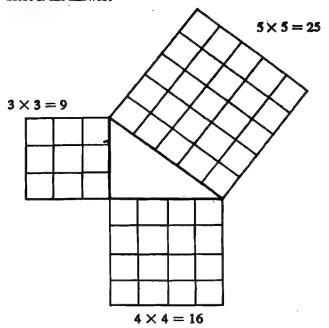


Can you tell without measuring? How?

About 2500 years ago (500 B.C.) a great Greek, Pythagoras, proved that the square on the longest side of any right angled triangle is equal to the squares on the other two sides added together. We can use his discovery to get our answer. We multiply the length of each of the two shorter sides by itself. We add the answers together. Then we find a number which, multiplied by itself, gives us this number.



Here is the answer:



$$9 + 16 = 25 = 5 \times 5$$

When we multiply a number by itself we "square" it. Any number is the square root of its square. 5 is the square root of 25.

to squares i	o multiply a number by Itself.	
will square	square(s)	squared

It was not until many centuries later that men put this knowledge of geometry to wide use. The development of science had to wait until the days of Galileo and Newton. In the last three centuries men's ways of living have been and are being deeply changed by science. These changes can be compared only with three or four great earlier steps in the history of man's development. These are the birth of language, the use of fire and farming, and the invention of writing.



Here is a horse walking round and round the mouth of a well.

He is pulling on a strong stick of wood which is kept turning by his motion. This moves a chain with buckets on it. The motion of the chain carries buckets full of water up and takes empty buckets down.

The horse has a cloth over his eyes to keep him from seeing that he is walking all the time in a circle. Would he stop if he knew he was going round in circles? Today machines are the work horses. They are doing what men gave all their days to doing in the past. Men's muscles get less tired in the machine age, but they often get more tired in other ways. We are finding that we need more and more time to work out the direction that our lives may best take. We need a new design for living.

Men carried water from springs and rivers, and pulled it up by hand from wells, long before they learned even how to turn a chain round a wheel. They put a cord round a wheel and turned the wheel round because that was less hard work than pulling full buckets up the well by hand. The steps have come slowly because each has to be taken before the next. A next step was to put another bucket on the other end of the cord so that an empty bucket went down as the full one came up.



often: time after time.

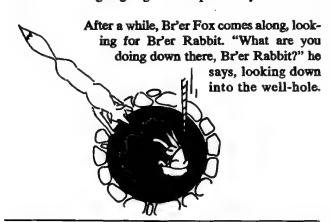
designs picture of what can be done. Before a house or a complex machine is built, the builders must have a design (a "blueprint") before them.

In one of the well-known Uncle Remus stories, Br'er Rabbit, a little animal who always gets the better of the other animals living near him, gets into a wellbucket...



and down he goes to the bottom of the well. As his bucket goes down, the other bucket comes up empty.

"How am I ever going to get back up?" he says to himself.



Br'er: Brother.

"I'm doing a little fishing. There are hundreds of fish down here."

"How can I get down there?" says Br'er Fox.

"Just get in the bucket, Br'er Fox. It'll bring you down

in no time," says Br'er Rabbit.

And as the fox goes down . . .

up comes Br'er Rabbit to the top in his bucket, as he wanted to do.

The two buckets go by one another on the way. "Good day, Br'er Fox, some go up and some go down. A happy landing to you," says Br'er Rabbit with a smile and a wave of the hand.

Such stories about animals are as old as any of man's inventions.



just: in this sense, only.

bring: make...come; come with.

landing: coming to land, to earth, to harbor.

will bring

bring(s)

brought

16 Заказ 1633 465

Here is a water wheel being turned by water power.

The weight of the water falling into the buckets turns the wheel, and the wheel, in turn, turns great round stones (millstones) for crushing (milling) grain and making it into flour.



Men took their grain to the miller to be made into flour. Then they took the flour away and their wives made it into bread.

Men did all this everywhere in the old days before the invention of steam engines and electric power.

Here is a windmill which does the same sort of work.

The wind pushes the sails of the windmill round. The work of the windmill is dependent upon wind. When there is no wind the miller cannot make his flour because there is no power to turn the mill-stones round.



There is an old song about a miller who lived by himself and could be heard singing a song all day long.

"I care for nobody, no not I And nobody cares for me."

sang the miller.

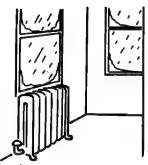
What he meant was that he did not love anyone and that nobody loved him. He had no hopes or fears. He did not hope for anything or fear anyone.

push: give a push to.

hopes our feeling when we look forward to and desire something, fears opposite of hope; feeling about things which we think may take place, the thought of which makes us turn white and shake all over.

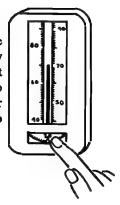
will push will hope will fear push(es)
hope(s)
fear(s)

pushed hoped feared



In many parts of the earth the climate is either too hot or too cold for man most of the year. But it is now possible to put automatic controls over temperature into houses, offices, and work plants.

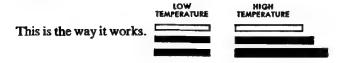
Here is a thermostat which keeps the temperature of the air as high or low as we want. We put the pointer at 70°F; then the thermostat will keep the temperature of the room near 70°F, the point on the scale to which the pointer points.



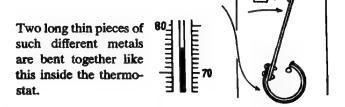
climate: weather through the year; temperature, amount of rainfall, amount of water in the air and so on.

thermostats instrument for keeping automatic control over temperature. pointers person or thing pointing.

A thermostat is designed for this purpose. Its design makes use of our knowledge of what metals do when heated.

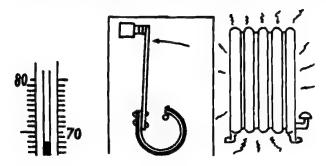


Different metals get larger by different amounts as they are heated.



When the temperature in a room goes above 70°F the metal on the outside gets longer than the metal on the inside. This moves the arm to the right and shuts off the fuel in the heating system of the house.

When the room gets too cold, the piece of metal on the outside gets shorter and moves the arm to the left. This turns on the heating system and more fuel is burned to warm the house. The purpose of putting a thermostat into a heating system is to control temperature.

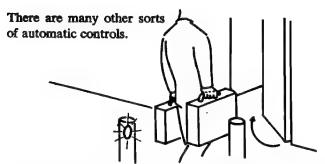


In hot climates what is important is to cool houses by sending fresh cold air through them. We can control the temperature of the rooms and in addition dry the air and have a climate of our own making indoors. Every ice chest has a climate of its own inside it. It is strange and surprising, but true, that ice chests are kept cold by using heat. The heat is supplied by electric power or by burning gas. Scientists tell us that before long men will be using the sun's heat to cool buildings. This will make life in hot climates much easier.

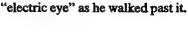
will dry

dry (les)

delad



In this hotel a door is automatically opening to let a man go through. His body has shut off the light from an





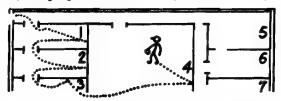
In this bank a bell is ringing loudly because someone has touched a window. The man was hoping to break into the safe.

Many offices, banks, stores and work plants are kept safe at all times by such automatic watchers.

ringings sound made by a bell. We say that a bell rings, safe: steel box where money and important papers are kept. They are safe when locked in it, if no one breaks it open.

hotel: building where people can get rooms for money.

will ring will touch will break ring(s) touch(es) break(s) rang, rung touched broke, broken Here is a night watchman in a motion picture studio (plant) keeping it safe from danger of fire at night.

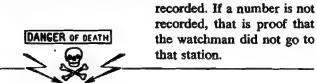


He has his time clock with him. He walks all night long through the plant from one station to another. At each station he pushes his time clock against a key which is fixed in the wall.

This key prints a number on a long narrow roll of paper which is moving all the time through the lock of the time clock.



In this way the time clock makes a full record of whether and when the watchman went to each station in the studio in turn. The time at which he was at each one of them is



KEEP OUT

	1:11 1:12
	1:13
	1:14
4	1:16 1:17

This record is necessary before the insurance company will pay for damage done to the plant by fire. The insurance company needs to know where the watchman was all through the night.

The motion picture company pays insurance money every year to the insurance company. In exchange the insurance company will pay for any damage to the building done by fire. But the motion picture company is responsible for keeping the studio as safe as possible from fire. The night watchman with his time clock is part of the system of keeping the studio safe from fire.

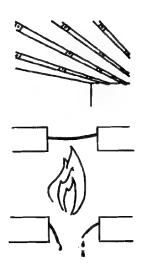
responsible: if you are responsible for doing something, you have to do
it, if you give your word that you will do something, you become
responsible for doing it.

insurance: making safe from danger; making good when something goes wrong.

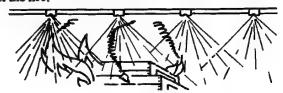
company: business group.

damage: if a thing is burned, broken, or put out of working order it is damaged. Damage is done to it.

Here is a more fully automatic part of a system of controls against fire. Some metals melt at low temperatures for metals. Thin lengths of such metal are placed at many points in the plant. A fire starting near one of these points will quickly melt the metal.



This starts an electric system working. It opens outlets through which water comes down from the ceiling to put out the fire.



The price of such a system may be high, but it is much lower than the price of a new building. Such insurance is cheap at the price.

melt: become liquid, as ice becomes water. celling: inside of the roof of a room. cheap: low in price for what you get.

will melt

molt(s)

matted

Much of the work in present-day factories has to be automatically controlled. The much-talked-of Assembly Line was a first step in this direction. It let men make automobiles and many other things much more cheaply than they could be made before.



An Assembly Line is a moving line of parts of whatever is being made. Each worker (man or machine) does one thing (adds or changes some part) to each automobile (or whatever is being put together) as it goes by. The work of each is dependent on what has been done before. They are parts in an over-all design with an over-all purpose.

If you make men into machines for short working hours you can free the rest of their time. What for? To what purpose? What is man designed to do? This new free time has been given man by the workers and thinkers of the past. He has to think about what he will do with it, and about the best possible use of it.

free: make free.

will free

It seems sometimes as if men want very much to put an end to waiting on one another. There are many ways, for example, of making the serving of food in restaurants more or less automatic. One of the causes of the high price of food in restaurants is the use of waiters and waitresses. One waitress can serve only a small number of people, if she has to go to and



from the tables with trays. And fewer people than before are interested in doing this sort of work even when the hours are short, the pay is good and the work not too hard.

In present-day living more people than ever before eat at restaurants. Many housewives who used to have servants now do all their own housework.

serve: give out, put before, do things for.

waiter: man who serves at table or in a restaurant.

waitress: woman who does the same.

servent: one who serves others, for example, a person who is paid to do housework.

will serve

serve(s)

served

There are ways of making restaurants self-serving, that is, of getting the public to do more of the work so that fewer waitresses are needed and less time is wasted in waiting to be served.

The nearest thing to complete self-serving is the AUTO-MAT. Food and drink are put into boxes with glass doors in front.

You look at the food.



If you want what you see, you put in the right amount of money and the door is unlocked so that you can open it.



You take the food out and shut the door again.



Fresh supplies of food are put in the boxes as they are emptied.

More and more use is being made, in public places, of automatic machines which sell food, cigarettes, drinks, stamps, or even books.



To make buying and selling simpler and more automatic is important. Too many housewives have to give up too much of their time to shopping for their families. Some of them use up a large part of their lives going from shop to shop to get what they want and waiting in line for people to serve them. Serving themselves frees them from this.



shops store. In the United Kingdom shop is used and in the United States store, but you go shopping in both countries—that is, you go to stores to see what you can buy.

will shop

shop(s)

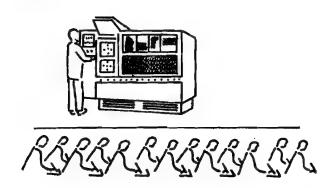
shopped

There are great food stores today where every sort of food: meat, bread, butter, milk, vegetables, flour, sugar, salt, fruit—whatever it may be—is put out, each in its place, on shelves for everyone to help himself. You take what you want, put it in a little cart if there is much of it, and take it to a control counter where you pay for it. An automatic adding machine is used to give the amount you will have to pay and to make a record of the things you have bought.



The adding machine prints the price of each thing on a roll of paper. You see how much you are paying for each thing you are buying and how much what you have bought adds up to. Then you get a list of the amounts recorded and the store keeps a copy. These records of everything sold help to keep the business of the store in order.

In many businesses accounts are kept by machines and the records are photographed. When there are millions of different facts to be taken into account, and records of them to be made, machines can work far more quickly than men.



The newest and greatest accounting machines can do far more work in a minute than the quickest man could do in a year. But the machines and the questions put to them come out of men's minds and are controlled by men.

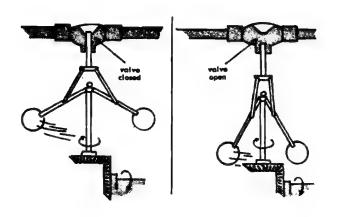


will photograph

photograph(s)

photographed

It was James Watt who in 1788 invented the Flyball Governor for steam engines as a way of making the engine able to keep control over its own rate of motion. This was the invention which made the steam engine a safe machine.



The two balls are kept flying round and round by the motion of the engine. As it goes more quickly they fly farther out and this shuts down the supply of steam coming to the engine from the boiler. When the engine goes more slowly the balls fly lower and this opens up the shut-off (valve) and lets more steam through the pipe to the engine.

The governor of a steam engine took its name from the fact that it governs the engine as a government governs a country. A government in a free country is a group of men to whom the people give the power to govern them. In free



countries there is government of the people, by the people, for the good of the people. The government is the instrument by which the country controls itself. In a free country the people can change the government: they can take the power away from one group of men and give it to another. And there is a limit to the powers that any government is given or can take.

governs be in control of.

limits the point, line or edge where something comes to an end. To limit is to put a limit to,

will govern will limit govern(s) ilsuit(s) governed betimil In a free country the men in the government are dependent upon the people and responsible to them for the use made of the power which has been given them. In any good system of government, there must be ways of controlling and limiting the amount of power anyone has, as the flyball governor controls and limits the output of the steam engine.



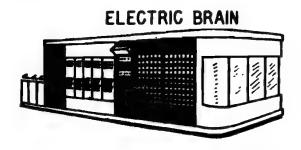
One of the chief controls over the power of a government is the law of a country. The law is a body of statements about what may be done to or by any person. In free countries all men are equal under the law which they are responsible for keeping. To help them to keep it there are police and judges.

17 *

judgess men trained in the law who are responsible for saying what the law is and what is to be done to men who break it.

Our bodies govern themselves in many ways (pp. 87-91, 115) but we have to control them consciously too. We have to be their judges and police, when necessary. But in a well governed country there is little work for police and judges. A good education develops the power of a person to govern himself in more and more complex ways.

As population increases and as men become more responsible for meeting people's needs on a larger and larger scale, machines become more important. As the facts become more complex, machines are being used more and more to do all sorts of measuring, counting and controlling.

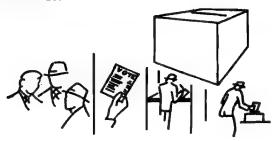


Can machines think? In a sense, yes. In another sense, no. They can answer a question if we have built into them the power to answer that sort of question.

education: In a wider sense, ways in which we learn to become more able and responsible.

We can make machines work for us, but machines cannot tell us what that work should be. It is men who are responsible for the direction of the work.

Men have to know not only how to do things but whether to do them and when. A machine has only to do what it is made to do.



Free men have to make up their own minds about all important questions.

How does a man learn to do this? By being with, talking to and watching others who are able to think for themselves he may see how to think for himself. He gets better at it by trying. Education in this cannot start too early.

should: would best be; the work should be what would be best for man. direction: seeing what should be done, giving



How do men come by their ideas about what is better and what is worse, about what things are important in life, what unimportant? How do they judge between things?

Man has grown to what he is out of the past. He has come a very long way through change and growth from the first living cells.





All living things, however simple, control themselves to some degree. Many cannot be said to have ideas but they have direction. Within limits they have self-control.

come by: get, in the sense of develop.

[udge: come to a clear idea of what is best.

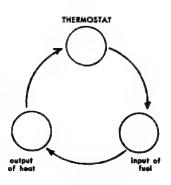
will jedge

judge(s)

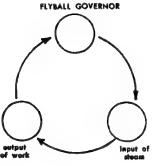
begbu

Thinking is the most complex sort of self-control; and our brains, with which we think, are the most complex systems of feed-back. The thermostat and the flyball governor are about the simplest of them. In feed-back systems, effects control their causes.

In the thermostat feed-back circle the effect of increased input of fuel is increased output of heat. This effect feeds back, through the thermostat, and cuts down the input of fuel when the increase becomes too great.



In 'the flyball governor circle the effect of more steam is more output of work from the engine. This effect feeds back, through the governor, and cuts down the steam when the engine goes too fast.



In the brain millions of feed-back circles are always controlling one another. Man's past is a very small part of all time, but it is a very important part.

How old are the stars? How old are the Sun and the Earth and the Moon? Nobody knows for certain. It is not possible at present to be certain about such great questions as these, but two things seem probable.

The universe is about five billion (5,000,000,000) years old.

It has been becoming more and more complex from the start.

cortoins

two different meanings of "certain":

probables more than possible, less than certain.

If there are seven black boils and three white
bails in a bag and you take one of them out
without looking, it is probable that you will
get a black one.

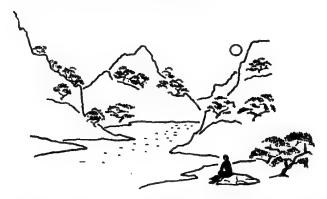


You are certain about something when there is no question in your mind that it is so,

Something is certain (is a fact) if it is well-supported by all the rest of knowledge. We are sometimes certain (in sense 1) about things which are not certain (in sense 2).

However we try to think of time, it seems certain that the earth is older than our minds can take in.

Things have been going on for a longer time than we can think of and they will go on and on through a longer time in the future than we can think of.



Seventy years seems a long life-time if compared with the present minute. But if compared with the age of a stone it seems no time at all.

There is a Chinese poem which says:

Quickly the years fly past forever, Here forever is this spring morning.

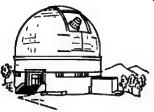
poem: something said for the complete man (his thoughts, feelings, desires, hopes, fears...) in the best possible way.

We have to think of Time and Space together: here and now, there and then. We cannot see with our eyes how far off in Time and Space the stars are, but astronomers can measure their distances. Their unit of measure is the light-year—the distance light travels through Space in a year.



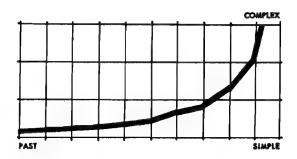


The greatest telescopes of today let us look two billion light-years out into Space. The stars we see there are two billion light-years away. We see them as they were two billion years ago. We are looking into the past.



astronomer: scientist working in astronomy. astronomy: science of the stars.

Let this curving line represent growth from simple to complex in the world.

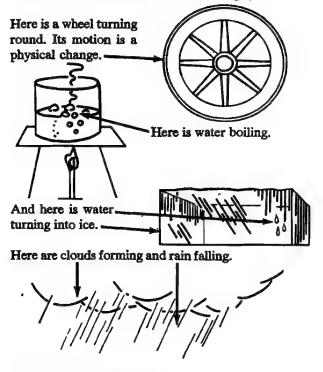


In this picture the past is to the left and we men of today are at the top of the curve.

Long, long ago, the only sorts of changes that took place were—so men of science say—very simple in comparison with the changes which are taking place in you now as you read this.

The curve represents the change from simple to complex. The higher it goes the more complex are the sorts of changes which are taking place.

In the beginning—as long ago, as far back in the past, as we can talk about—the only sorts of changes which took place, scientists say, were physical changes. They were the sorts of changes which the science of physics is about.



These are physical changes.

physicals in the narrow sense used here, within the field of the science of physics. In a wide sense, material having to do with bodies not minds.

Much later, other sorts of changes, more complex than these, began to take place.

Here is a lighted candle. As it burns the heat melts the candle and the liquid goes up into the flame where it is turned into gas.



So far all is physical.

But in the flame chemical changes take place.

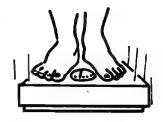
Carbon from the candle and oxygen from the air come together to make carbon dioxide. At the same time water is given off, as you may see if you hold a glass cover over the flame. The cover quickly becomes clouded with little drops of water. This water was not in the wax and the candle

flame gives it off however dry the air is. The water and carbon dioxide come into being through the chemical exchanges, between the lighted candle and the air, which make the flame.

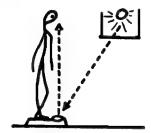
At the same time there are physical changes taking place. The top of the candle is melting and the liquid fuel is moving up into the flame and being turned into gas, air is coming into the flame, carbon dioxide and water are moving up from it and heat and light are being given out.

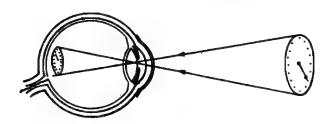
chemical changes: changes that take place in the structure of different sorts of material, turning them into other materials.

When you step on a scale, the scale goes down and the springs inside it are pulled out, and the pointer moves to a mark. These changes are physical.

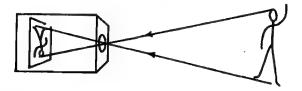


When you look at the pointer to see what your weight is, rays of light come from it to your eye and go through the lens in your eye to a point on the retina.

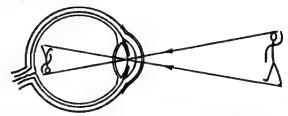




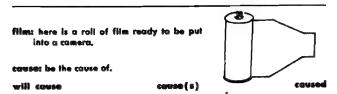
least leases in cameras are made of glass. The leas in an eye is built of clear living cells. retinas coat of cells at the back of the eyeball. In a camera, rays of light from whatever you are photographing make an upside down picture on the film.



So it is inside your eye. The pictures made on the retina are upside down.



Everything going on so far has been physical. But in your retina more complex sorts of changes now take place. Some of these are chemical. Complex materials in the retina go through chemical changes not very unlike those that make photographs on films and these changes cause other much more complex sorts of changes in the living cells of the retina.



These nerves, which make us able to see, are an outgrowth from the brain to the retina. From the eye impulses travel to the brain through the living cells of the nerves. There are as many as a million separate telephone lines in these nerves alone.

A train of changes goes up these nerves to the back part of the brain. The cells there let us see the things that our eyes are looking at. No one, at present, has any idea of how they do this.



The distance from the eye to the back of the brain is not great, but some distances from some parts of the body to the brain are long. The rate at which impulses travel through the nerves is about the same for all of them.

The distance from a man's toe to his brain and back may be as much as twelve feet. When you are feeling with your toe for a step to put your weight on, the impulses have to go up your nerves from your toe to your brain and back down again to the muscles which move your foot.



When you are walking, almost all the muscles in your body are at work keeping you from falling down. Your muscles and nerves work together to keep you on your feet.



These changes in the nerve and muscle cells are dependent on what is going on in other cells in the body in many different ways.

Life on earth began, it is thought, about two billion years ago. No one knows for certain whether there are living things on other planets—on the red planet, Mars, for example, or on any of the ten million, million planets like the earth which are now thought to be traveling round other stars which are like our sun. It seems possible—even probable—that there are living beings (not unlike men maybe) on many of them.

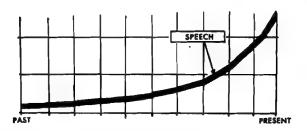
Changes of color on Mars are seen at different times of the Martian year. These changes may be caused by the growth of plants.



The newest and highest development of living things on earth is Man. About a million years ago, early men were beginning something new in the long story of the earth. Let us change our time scale and make this line:



represent one million years, the time since Man began.



Then this curve may represent the next great steps forward into more complex ways of living.

No one knows when speech began. Probably speech developed slowly and in different ways and at different times with different sorts of men. But certainly it was through being able to speak to one another that men became human. With the growth of language a great development of the parts of the brain which are used in talking took place. Speech gave Man greater and greater control over the world, over other men and over himself. Without language, Man would not have become what we mean by the word human.

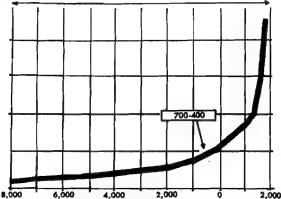
speech: talking, word language of the voice.
human: The a man, different from animals, as man should be.

will speak

speak(s)

spoke, spoken

Let us change our time scale again and make our line represent 10,000 years.



The next great upward turn of our curve came some twenty-five hundred years ago. In many different parts of the earth, Man was discovering then his first full and clear ideas of himself and of his world.

In Greece, the great poem, the *Iliad*, and Socrates and Plato.

In Palestine, Amos, Hosea and Isaiah.



"You may not make for yourselves an image of anything in the sky or on earth or in the waters under the earth."

(Deuteronomy, 5:8.)

image: picture or sculpture representing something.



In India, Gautama Buddha and the Bhagavad-Gita.

In China, Confucius and Mencius.



At first through the spoken word and then in writing, men began to make for themselves pictures of Man and of what Man should become. More than some know, men have been living by these pictures ever since.

If you have read this book up to this point, you can easily read for yourself *The Wrath of Achilles* (Homer's *Iliad*) in simple English, *The Republic of Plato* in simple English (both W. W. Norton, New York) and the Books of Amos, Hosea and Isaiah in *The Bible in Basic English* (E. P. Dutton, New York).

Here are some of the greatest sayings of all time which, in one language or another, go on living in men's minds. For many centuries school children in China began to learn to read with this sentence:



From the Chung Yung (a later work of the school of Confucius):

"What makes us is named our nature. What directs our nature is named the Way. What makes the Way possible is education."

our nature: what we most deeply and truly ARE.

will direct

direct (s)

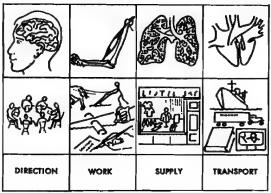
directed

At first, writing seems to have been chiefly a way of keeping records. The first great poems, the *lliad*, for example, were in the minds and mouths of poet after poet before they were written down.

The teachings of Buddha and of Mencius, Confucius and the earlier Hebrews were given first by the spoken word and written down later by some who heard them. Socrates, though he used books, thought that teaching should be by word of mouth and by example. And Jesus taught only by what he said and did and was.



Later, the written word was to become the chief instrument through which Man could try to understand himself and his world. It is chiefly through reading, and through thought about what we read, that we come to see how our ideas depend upon one another—very much as men are dependent upon other men, or as organs in our bodies are interdependent.



Through reading and reflection we can learn to know ourselves. Reflect for a while on these words of Shakespeare. Thinking, he says,

"... turns not to itself
Till it has traveled and is mirror'd there
Where it may see itself."

Troilus and Cressida, Act III, Scene iii, lines 109-111.

Some very good students of Shakespeare think that he wrote married, not mirror'd in line 110.

organt heart, lungs, stomach, brain, etc.

interdependents dependent on one another.

reflection: If you look in a mirror
see a reflection of yourself. The mirror reflects light from you back
to your eye. The eye is the sense organ most clearly servant to the
brain. When we understand we say we see.

will reflect

reflect(s)

reflected

Every idea with which we reflect is what it is and can do what it can do only because our other organs of thought are what they are and do their own work.



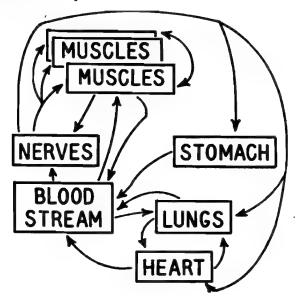
The parts of this bridge do what they do only because the other parts of it are there and are doing their work.

And this is equally true of the words in a language. Every word is able to work as it does only because other words work with it.

In every step we take, what any of our muscles can do depends on what our other muscles are doing, and all this is possible only because our nerve cells are in control. And nerve cells can work together well only if the blood is serving them well.

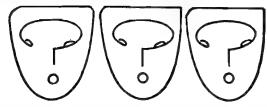


And the blood can serve them well only if the heart is in good order and if the lungs are taking in enough oxygen; and the heart and lungs in turn are dependent on the food the stomach can give the blood stream and on the control the nervous system can keep up over all the organs of the body.



But in fact, the organization of our bodies is far more complex than this short and simple account can say. In everything we do, every breath we take, every motion we make, from the directing of our eyes as we look to the wording of a sentence as we write, billions of cells of every sort in our bodies are working together serving one another.

It is the same with Man and his world. Any great question coming up in any part of the world today has its effect on almost everyone anywhere. As with the body, damage in any part is damaging to all the rest. The more men reflect upon this the more they will understand why world organization is important. We are far more dependent upon one another than we know.



"What to do? What to do?" said Confucius. "In truth, I do not know what to do with a man who does not ask himself this!"

A wise man goes on asking himself what to do all his life. It is two questions:

- 1. What should Man want to be or to become? What is Man's end or purpose? We have seen (page 204) how far he has come. Where is he going?
- 2. How can he best work to this end?

Everything, said Aristotle, has its own true work—or purpose—the work it can do best, the work which is right for it.







A good wheel turns well, a good knife cuts well, a good clock keeps time well. A good apple tree gives good fruit, a good cow gives good milk.





In the body, eye, hand, foot, each has its own work to do.

What can Man do best? What is his own work as Man?

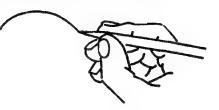
Is it to learn? To learn what?

Is it to learn what to do?

How does he learn?

Is it by the feed-back from the effects of what he does? Is it by seeing from the outcome whether he is doing the right thing? If you are trying to draw a circle, the curved line you have made (together with your knowledge of what a circle

is) keeps telling you how to go on. You can learn to draw better by trying.



If you are making a speech, what you will go on to say depends upon what you have said up to that point and upon the people listening to you. A bad speaker is one of whom this is not true. A good speaker has learned by experience how to design a speech and how to change the design if necessary.

In speaking, as in everything we do, the way we begin depends upon what our purpose is, upon what we are trying to do. But we are not always, nor need we be, fully conscious of what that purpose is. Sometimes, in reflection, we see more purpose than we knew in what we did. How you start your circle depends on how large it is to be.



So there is feed-forward as well as feed-back. Feedforward is as widely supported a fact as feed-back. Any number of examples can be found. There can be no feedback without feed-forward. Knowledge of what you have done and are doing will not help you unless there is direction in what you are trying to do.

You may not fully know what this direction is; you may be trying to find out what it is.

As the development of the microscope has increased man's power to see, so the development of his instruments of thought is increasing his power to design and direct and see what he is doing.

In every sentence you write, the feed-back from the letters of any word you are writing, together with your knowledge of the spelling of the word, tells you which letter to write next. But feed-back can do this only because you fed forward that word and no other as the word you would write. And in writing any sentence, feed-back from the words you have written can tell you what to write next only because you fed forward that sentence. And you fed forward that sentence only because of a more general feed-forward, the purpose of the paragraph in which the sentence is to take part. And the paragraph too depends upon the chapter and the chapter on the book.

"General"? What does this word mean? Each of these circles as they go out from YOU represents a more general idea than all that is within.



paragraph: a part of a longer piece of writing which develops an idea in it.

chapters a part of a book made up of a number of paragraphs under a separate heading (or number).

John Amos Comenius (1592-1670) was, so far as we know, the first man to use pictures in books written for beginning readers and for beginners in a second language. (It was Latin.) He was to have been the first head of Harvard College, where this book is being written, but could not come.

Comenius began his reader, Orbis Pictus (Nürnberg, 1657), with this picture.



The teacher is saying: "Come, Boy, learn to be wise." And the boy asks: "What does this mean, to be wise?" The teacher answers: "To understand rightly, to do rightly and to speak out rightly all that is necessary."

The teacher gives the boy an answer though he knows that no one can become wise all in a minute. All our lives through, we go on learning how to understand rightly, to do what is right, and to speak out at the right time. See the size of the question the boy is asking.

In this book we have not tried to give any answers, but only to bring together some of the more important ideas and facts needed if we are to ask ourselves what we should know and think and feel and desire and do. To have been wise is to have known, thought, felt, desired and done as was best. But there are many different ways of knowing, thinking, feeling, desiring and doing. Which are the best? That is the question. Our lives are our attempts to find an answer, and language is the most important of all our instruments for this purpose.

desire: have a desire for.		
will desire	desire(s)	desired

